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ILLUSTRATIONS.

Sculpture: "La Seine et L'Escaut"....M. Corneille H. Theunissen, Sculptor.
Competition Design for Wesleyan Hall, Westminster....By Messrs. Crouch, Butler, & Savidge.
"Britwell," Herts....Messrs. Hubbard & Moore, Architects.
House at Haslemere....Mr. E. J. May, Architect.

Illustrations in Text.

Competition Design for Wesleyan Hall. Plans Page 126
"Britwell," Herts. Plan ..... Page 127
Porch at Haslemere. By E. J. May ..... Page 127
House at Haslemere. Plan..... Page 128

CONTENTS.

	PAGE
Report of the London Traffic Commission.—II.	111
Notes	114
Congress of the British Archæological Association at Reading	115
Cheap Cottages Exhibition	118
The Royal Institute of British Architects	119
The Royal Institute of Public Health	120
National Competition of Schools of Art	124
The Architectural Association	125
Correspondence:—	
Gibbon *v.* Pease	125
Chelsea Public Baths	125
Court of Common Council	125
Metropolitan Asylums Board	125
Illustrations:—	
Sculpture: "La Seine et L'Escaut"	126
Design for Wesleyan Hall, Westminster	126
"Britwell," Herts	127
House near Haslemere	127
The London County Council	127
Applications under the 1894 Building Act	128
The Royal Sanitary Institute	129
Engineering Societies	130
Books—S. Smiles's "Lives of the Engineers"; "Home Counties'" "How to Build or Buy a Country Cottage and Fit It Up"; P. L. Marks's "The Principles of Planning: An Analytical Treatise for the Use of Architects and others"	130
Books Received	131
The Student's Column	131
Obituary	132
General Building News	132
Appointments	133
Foreign	133
Miscellaneous	133
Legal:—	
Bethnal Green Ancient Light Case	134
Point under the Public Health (London) Act, 1891	134
Action by Builders' Merchants	135
Removal of Shingle from a Fore-shore	135
An Architect's Claim	135
Patents	135
Some Recent Sales	136
Meetings	137
Prices Current	137
Tenders	138

Report of the London Traffic Commission.—II.

HAVING in our last issue considered the suggestions of the Report in respect of street traffic, we have now to consider what is said in regard to railway transport, and some special proposals for bridges and other means of getting over crowded points, and also the proposal made for a more general administrative control of the whole traffic problem.

As the Report assumes, in one of its earlier pages, the housing problem is very largely bound up with and influenced by the question of railway communication between the centre of London and the suburbs. The evidence before the Commission (which, of course, we have not yet got) is taken to have established five propositions—(1) That the overcrowding in the metropolitan area is greatest in the central area, and tends to diminish towards the circumference. (2) That the average weekly rents for workmen's dwellings are highest in the central and more crowded districts of London, and tend to diminish towards the suburbs. (3) That the price of land in the central districts of London makes it impossible to re-house the working classes within those districts at rents which they can afford to pay, without a heavy loss to those who undertake the re-housing. Also that the price of land a few miles out is still sufficiently low to admit of re-housing, without loss, at rents which the tenants can afford to pay. After some statistics of special cases, it is added as a corollary that whenever the London County Council have tried to provide workmen's dwellings in the central district there has been a heavy loss, and that "in effect the rents are largely paid out of the rates." (4) That a large proportion of workers in the over-crowded parts of London do not need to live near their work. (5) That where facilities for locomotion have been afforded, the population does, in fact, take advantage of them to live outside London. This is illustrated by the increase in the population of Edmonton, Walthamstow, and Leyton, since the Great Eastern Company commenced running workmen's trains to those places. The figures of increase are remarkable, but of course are not entirely due to the train service, though there is a marked increase about the time the train service was first started.

All this, it is urged, points to the necessity of securing ample and cheap train service out of London; but the Report admits difficulties in the way. Railway companies cannot be expected to open up new routes under the mere expectation or chance of creating a paying traffic; accordingly, many places suitable for building are not accessible by railway; and if there were facilities for going out of London in all directions, not only would the overcrowding of trains be less, but the demand for housing would be more dispersed and the rents payable by the working classes would be kept within moderate limits. The result of all this seems to be, that more railways out of London are wanted, but that it is no one's direct interest at present to provide them. The Commission, on the basis of a remark by one of their witnesses, Mr. Perks (late chairman of the Metropolitan District Railway Company), suggest that railway companies might be allowed to purchase land in the vicinity of a new line while making it, in order to participate in its increased value. The Commission did not think it within their reference to pronounce an opinion on this point; they only observe that the provision of transit is a costly business; and that means must be provided for taking the population out of London, not in one or two directions, but in many directions, at rapid speed, short intervals, and cheap rates; and they leave it to be inferred that they are in favour of the above-suggested means of encouraging the enterprise of railway companies, though not called upon to pronounce on it. On page 71, however, we find reference again made to this subject, in a less reserved spirit, in a clause in which it is concluded that power to buy land should under such circumstances (*i.e.*, making a railway into a thinly-populated district) be conferred on railway companies. It is also suggested (page 29) that authority to assist or construct underground railways should be given to the London County Council and to the City Corporation, "so that such power might be used to relieve congested areas, and to move

people out to more thinly populated districts."

That is all the suggestion that is made in regard to promoting the formation of what may be called a centrifugal railway system; and all that can be made, as far as we can see. We then come to the question of the use of railways within London, which has to be considered under two aspects—the routes to be adopted, and the kind of railway which is best. The "Inner Circle" railway, though it has been very useful, was first projected with the object of facilitating connexion with the termini on the north side of London and with the City. The northern stretch of it was first made with this object; it was to bring people into the City, and the southern limb of it was, in the first instance, a rival route, which used to be absurdly advertised on the stations as "daylight route to the City," there being a little more open air cutting than was to be found on the northern route. The combination of the two into a circle railway facilitated working, but it was one of those things done without any system; it carried people where it could, not where they most wanted to go, and left the centre of London un-served, leaving thus an opening for the Central London Railway to fill the gap. But we still have the north and south railway connexion unsupplied. It appears that Mr. Perks, in his evidence, stated that the Metropolitan District Railway were desirous of discontinuing the "Inner Circle" trains, and starting "shuttle services" between Edgware-road and South Kensington, treating the Metropolitan and Metropolitan District Railways as east and west routes only. This would involve changing carriages for the cross route, but it would be a more reasonable way of making a service from north to south than by a circle train.

We may gather from the Report that at all events there is springing up a conviction that urban railways should be planned and laid out on some definite system to be worked up to and carried out by degrees, each new railway forming a link in a system planned beforehand and laid out as a whole. It is very late in the day to have come to such a conclusion—too late to undo some of the mistakes that have already been made, but a grasp of the whole problem may at any rate prevent further mistakes in the future.

The railway map appended to the Report shows in different colouring the existing and authorised railways, tubular and other, and seems to indicate that when all these are made, the cross or north and south connexion now so deficient will be pretty well provided for—that is to say, for those who like that method of transit. What we do not understand in the map is the dotting on it of a projected tubular railway close to the District Railway from Mansion House to Earl's Court, following all its windings and showing a duplicate line the whole way. Why this route, rather than any other, should be thus doubled, we fail to see.

Whether the tube railway is really the best way of providing for urban railway transport is, however, most decidedly a question to be asked, and it seems rather inconsistent that, while the Report on one page expresses the opinion that London will be sufficiently served when all the tube railways on their map are carried out, on another page they raise grave questions (just too late, to all appearance) as to the advantage of deep-sunk railways of this kind. In the first place as to cost. Under Section 147 it is stated that the cost of tube railways, including that of the shafts and lifts, approximates to that of shallow railways not on the tube system, at least under the same conditions of location. "The cost of the more modern shallow stations has been due to the necessity of placing stations on private property, in order that they may be open to the air, on account of their being up to this date worked by steam locomotives. In the case of future shallow railways, which of course will be worked by electricity, there can be no objection to the stations being placed under the streets, and a very large reduction in cost both of property and works would result." It is also stated that it has been proved before the Commission that the cost of working the lifts is a very serious addition to the working expenses of each tube line. "It has been calculated, in the case of the Central London Railway, to add 8 per cent., or over 8,000*l.* each half year, to the working expenses." While on this subject, we may usefully quote at length paragraph 2 of Section 147 of the Report:—

"(2) With respect to non-interference with the traffic of the streets the advantages are distinctly on the side of 'tube' railways, though not to the extent which is generally believed. If the comparison were made between the construction of 'tubes,' and the construction of the original Metropolitan Railway by open cutting in Euston-road, the case would be overwhelming against 'shallow' railways; but such is not the present mode of making an underground 'shallow' line in large towns. The 'Inner Circle' completion was constructed through the heart of the City along the most crowded streets, such as Cannon-street, Eastcheap, and the Minories, under temporary wooden platforms, laid down at night, without any stoppage of the traffic, but involving a slight inconvenience, for a few months, from the wooden platform not being so good a carriage-way as a well-paved road. The same mode of construction was adopted through the most crowded streets of Glasgow, and a very large station was constructed without any serious interference with either the ordinary street traffic or a constant service of tramcars. Many other instances could be given, but another well-known example was the construction of the Bank Station in London, which was carried out without any serious interference with the street traffic of perhaps the busiest place in the world. The Metropolitan Railway in Paris is another instance of the adoption of a similar method of building a 'shallow' railway under public streets, in full use, with but slight public inconvenience.

It is thus evident that although the construction of 'tubes,' owing to their great depth in the clay, scarcely affects the traffic of the streets at all, yet the satisfactory construction of a 'shallow' railway is really only a matter of the adoption of proper precautionary measures."

To this we may add some further considerations which do not seem to have occurred to the Commissioners; which at all events are not referred to. When the London Central Railway was first opened, the clean and bright look of the stations and the rapidity of the transit took by surprise many of those (ourselves included) who had previously regarded the project of journeying in a tube so far below the surface as anything but promising or agreeable. After the first two or three days there was rather a rush for it, and the company could hardly provide for the traffic offered them. The enthusiasm has somewhat subsided now (though the trains are still very crowded at some parts of the day); and the first surprise at finding it so much less objectionable than was expected leaves room for some reconsideration. People who have no interests involved in the success of this form of railway must, we think, come to the conclusion that, for a permanent system, it has very serious drawbacks both in regard to health and safety. In regard to the former, it is true that no thorough and scientific system of ventilation has yet been applied to the tube railways. It is all nonsense to urge, as some engineers do, that the very movement of the train through a tunnel not much larger in section than the carriages necessarily produces ventilation. It produces a draught, and a very strong one, which is something of a relief; but it is only the *same air* which is moved; no fouled air is systematically abstracted, and no fresh air is systematically introduced; and any method of doing this efficiently would be a further addition to the working cost. As it is, we know that some people of rather susceptible organisation cannot stand the "tube" at all; it makes them ill at once. These are probably a minority; but even those less susceptible people who use the tube railway pretty often as a convenience probably find that in taking the whole route, from the Bank to Shepherd's Bush, they have about enough of it, and are not sorry to get out to the air again. And if this is felt even in occasional use, how will it be with those who have to use a tube railway twice every day to get from their homes to the City and back? In our opinion, very few people can do that without injuring their health and shortening their lives. And it must be added that while a tube railway is one of the safest of railways as long as everything goes right, it has dangers peculiar to itself in case anything goes wrong. However unlikely it may be, the possibility is always there of a breakdown in the middle of one of the tunnels, either from a mechanical accident or from a failure of current; in which case the passengers may be imprisoned for an indefinite time, without ventilation and with no possibility, as there would be in an ordinary railway, of walking out of the tunnel. Admit that such an incident is exceedingly improbable, it cannot be maintained that it is impossible; and the more the tube railway system is extended, the more the field of such possibilities is extended. In spite of the terrible catastrophe a year or two ago on the Paris Metropolitan Railway (which was due to mismanagement and recklessness rather than to construction), that railway, with its wide tunnels and roadway, and its easy access by stairs from the street, is a far more safe and satisfactory one than the London tube railways; and it is much to be regretted that these considerations were not taken into account before so many concessions for tube railways in London were made. The conclusions of the Commission as to the superior advantages of shallow railways, like almost everything else in connexion with the subject of London transport, come apparently too late to be of much practical use.

In Section 81 of the Report some special recommendations of the Advisory Engineers are referred to, which are intended to get over the difficulties of congestion at certain points. We cannot say that we are very much impressed with the practical character of these suggestions, or of two of them at all events. The first is, to commence a viaduct at the centre arch of Blackfriars Bridge and carry it north to the centre of New Bridge-street and Farringdon-street to terminate in Farringdon-street. This would involve the widening of Blackfriars Bridge and of Farringdon-street, and would be a very costly proceeding, attended, as it appears to us, with practical inconveniences in any case. Perhaps when we get the Advisory Engineers' Report we may find with it drawings showing how such a scheme is proposed to be carried out. For the present, we find it difficult to understand how such a viaduct, commencing in the centre of Blackfriars Bridge, is to get a sufficient headway over the junction of the Embankment-road and Queen Victoria-street, except by the employment of an inconveniently steep gradient. The second and somewhat analogous scheme is the construction of a viaduct from the north end of Waterloo Bridge to the hill of Wellington-street, across the Strand. Here also there appears to be very short space for getting a viaduct from the end of the bridge to give a sufficient headway across the Strand; and such a scheme would absolutely necessitate the widening of Waterloo Bridge, which we should prefer to leave untouched. Without widening it, however, too great a traffic would be discharged on to it; and we have no doubt the occasion would be seized on as an excuse for destroying and rebuilding Waterloo Bridge, thus robbing London of one of its grandest and most famous structures for a mere question of street way. That is obviously not included at present in the proposed scheme, as the cost of it is estimated at only 325,000*l.*; but that, we fear, would be the upshot of it. And, in a general way, all such schemes for a rising viaduct in the middle of a street must involve awkwardness and inconvenience at one point or another. However the headway may be arranged where the main traffic at right angles is crossed, there must always be a considerable portion of the rising viaduct which is too high to cross and too low to go under, so that for that portion of it one side of the street in which it rises is cut off from direct communication with the other side, which is a serious inconvenience. Schemes of this kind look much better on paper, as a rule, than they would work out in practice. The third suggestion is a sunken road from Berkeley-street under Piccadilly, to relieve the constant congestion in Piccadilly at the top of St. James's-street. Without seeing a plan and section of the proposed street it would be impossible to express any opinion upon a scheme so vaguely described. The Report merely says that it would involve the purchase of valuable private property, though no estimate of the cost is given. There is no doubt, however, that the block of traffic there is the most serious one in the western portion of London, and, in the afternoon at all events, much more serious than that in the Strand at Wellington-street; and that some decisive even if costly effort is called for to mitigate it, as the evil is likely to increase rather than diminish.

In regard to the general question of subways and subway railways two remarks are made in the Report, which are certainly borne out by our observation. One is, that subterranean railways, in spite of the large numbers of people who, at some parts of the day, travel by them, do not seem to have reduced the numbers of vehicles and foot-passengers to any appreciable extent. Certainly the omnibus traffic seems little if at all reduced since the underground and tube railways were made; the receipts of the omnibus companies may possibly tell a different tale, but the result is not apparent to the casual observer. The fact we take to be this—that the more means of transit are multiplied, the more people move about. Statistics have shown this to be the case in New York, and we expect that statistics would show the same in London. There is a constant tendency in these days to increased locomotion, and the increase seems to have a tendency to keep ahead of the means of transport. In regard to the provision of subways for foot-passengers, the Report remarks that however theoretically a convenience, they do not in fact seem to be much used when provided; and they instance the case of the system of subterranean footways under the crowded space opposite the Mansion House. Our own observation confirms this. There is always a crowd on the street footways at this point, and a crowd of persons endeavouring to cross the street in the midst of the vehicles; but we have never found any crowd in the subways, well arranged and convenient as they are. Apparently, when it is only a question of walking, the mere fact of having to go down a stair keeps nineteen people out of twenty on the surface. To walk straight on seems a more obvious thing to do than to go down a flight of steps.

We come lastly to the subject of administration. It is noted in Section 152 of the Report that the Select Committee of the House of Lords appointed in 1863, to consider the question of "Metropolitan Railway Communication," recommended that every system of internal railway communication for the metropolis should be under one management for working purposes—a recommendation out of which nothing came. But the present Commission express the conviction that "this opinion carries not less force in the present day than it did at the time it was made." We should say it carried even more force at the present day, when we are threatened with a network of lines each under its own independent management. The Report adds, in the same Section, "all large systems of mechanical traction can be worked most economically, and with the greatest advantage to the public, when they are under one and the same management."

It is evidently on the basis of this suggestion that the Commission have drawn up, as part of their Report, the recommendation of the creation of a "Traffic Board." We may quote the following statement of their argument, from Section 200 of the Report:—

"It would have been possible, at any particular date, to draw up a general scheme for street improvements, and the provision of facilities for locomotion and transport, and the financial difficulties in the way of carrying it out could have been overcome by legislation providing for assistance from municipal funds; but, even if any such general scheme had been devised, it would probably have been out of date before it was completed, and no permanent body existed which could modify it from time to time, in accordance with the ever-changing conditions of the problem. If such a scheme had been prepared in 1846, the provision for future urban and suburban traffic must, with the information then available, have proved insufficient. A scheme prepared at a later date would have become obsolete as soon as surface tramways and "tube" railways, worked by electricity, became practicable. There is no guarantee that a scheme prepared in the present day would be final; it is practically certain that it would require modification in a very few years. While, therefore, it is necessary that the provision of means of locomotion and transport should be carried out in accordance with a comprehensive plan, it is equally necessary that that plan should be modified from time to time to meet the changing requirements of the population, and make use of the latest scientific inventions. Under these circumstances, the only effective remedy appears to us to be the creation of a permanent authority, possessed of special knowledge and experience, and giving continuous attention to all questions affecting locomotion and transport in London. The present system under which an ineffective control is attempted to be exercised by opposing particular private Bills in Parliament, and, under which temporary Royal Commissions or Select Committees of Parliament are appointed, from time to time, to deal with special questions of an urgent nature, has failed."

It is proposed that this Board should draw up a yearly Report to Parliament on locomotion, transport, and traffic in "greater London," dealing with the whole subject of the control of traffic; the breaking up of streets; the removal of special obstructions to traffic, the provision of new lines of railway or tramway, etc. It is also proposed that it should deal with questions of street widening and the construction of new streets; but there would be a difficulty in this, as it would be trenching on the special province of the London County Council.

The Board would, further, be required to examine and report upon all Bills proposed to be presented to Parliament for schemes connected with locomotion. If required to do so by the Government, the Board might also prepare schemes for or in connexion with the provision of means of locomotion or transport, as well as report specially on any question affecting London traffic which might be referred to it by the Government. The idea of the amalgamation of London railway systems and tramway systems each under one management, already referred to, it would be one object of the Traffic Board to bring into actual practice, or to do all it could to facilitate that end.

As to the constitution of the Board, it is suggested that it should consist of a Chairman and not more than four or less than two other members, appointed by Government, and paid such salaries as would be sufficient to secure thoroughly competent men. It is not suggested that they should be experts in engineering or any other special profession, as the Board could consult specialists when necessary. All the other recommendations—as, that a member of the Board should not be a member of any local authority in London or have any

occupation which would limit the time he could devote to the work of the Board—are in favour of securing efficiency; but we do not agree with the Commission when they recommend the minimum of three members rather than the maximum of five. Three heads are hardly enough to manage such an immense aggregation of operations, affecting so many interests.

As we have seen, many of the recommendations of the Report are, for practical purposes, made too late; but it contains valuable hints for the future, and the formation of the Traffic Board, if carried out, would be a great and important step towards bringing order out of the present chaos of London traffic.

NOTES.

The Enrolment of Architects.

THE *Journal* of the Institute of Architects contains the draft of a Bill for promoting what is now called "The Enrolment of Architects" (we presume the word "Registration" has acquired rather undesirable associations), of which the first object is stated to be

"(*a*) To enable persons requiring professional aid in the design and construction of buildings to distinguish qualified from unqualified practitioners, and to prevent untrained and incompetent persons, styling themselves architects, from imposing on the community to its material loss, danger, and detriment."

We have not space and do not think it worth while (at present at all events) to consider the proposed measure in detail. It is to our minds little less than a catastrophe for the Institute of Architects to have been dragged into this at the bidding of the rank and file of the profession. As to the statement of "objects" which we have quoted, it would certainly be an appropriate question to ask why it is that the engineers, who are concerned exclusively with practical works of much greater scale and importance than usually fall to the lot of architects, do not find it necessary to have an Act of Parliament for preventing the selection of unqualified persons to act as engineers "to the material loss, danger, and detriment of the community"? If the sincere truth were told by many of those who support this Bill, we think it would read "to the material loss and detriment of our pockets"; to elude which they are ready to drag down a great art into a trade. However, the Bill is not carried yet, and we hope there will be a strenuous opposition to it.

Rural Water Supplies.

IN the paper read before the meeting of the Royal Sanitary Institute at Cambridge, Professor Sims Woodhead naturally devoted himself a good deal to the needs of the Cambridgeshire rural districts. His remarks are, however, generally applicable to most other counties. We quite agree that the problem of water supply in rural districts is even more pressing than that of the supply to large manufacturing towns. One very important consideration is that agricultural districts with contaminated water supplies may very easily become centres of infection to cities and towns receiving milk from such areas. That this is no idle fear is proved by the fact that many rural water supplies contain quite as large a proportion of micro-organisms as dilute sewage. Apart from the question of cost, the difficulties encountered by rural authorities in obtaining pure water supplies are very great, and there is much to be said in favour of a national water board with county committees, as suggested by Professor Sims Woodhead. This, of course, is no new idea, and it deserves support for various reasons, in addition to those mentioned by the author of the paper.

The Embankment Tramway.

IN rejecting the Tramways Bill of the London County Council the majority of the House of Lords appear to have been actuated by some mistaken notion as to the value of establishing connexion between Westminster and Blackfriars bridges. The immediate object of the over-bridge lines is not to enable people to ride along the Embankment, but to do away with the intolerable crowding which takes places at the tramway termini, and to diminish the serious interference with ordinary traffic at those points. At the same time, it is the fact that large numbers of people do want to travel between Blackfriars, Charing Cross, and Westminster every day. For these the tramway would be far more pleasant than the District railway and more expeditious than the omnibus. By utilising a by no means crowded thoroughfare, the congestion of traffic in Fleet-street and the Strand would be much reduced. The ultimate effect of the over-bridge lines would be to provide a link, *viâ* Kingsway, connecting the northern and southern tramway systems. The great difficulty in extending the tramway system in London is (as pointed out in our leading article last week) that so many of our streets are too narrow for it. The Embankment road is one of the widest, and therefore one of those to which this difficulty least applies.

Motorists and the Public.

THE Motor Union of Great Britain and Ireland and the Highways Protection League both held meetings last week. It is somewhat instructive to notice that whilst at the meeting of the latter society evidence was given by influential persons of the wild and reckless driving of motorists all over the country, at the meeting of the former society the only matters debated according to the report available were matters connected with the sport the Union favours; that is to say, opposition to adverse legislation, and the better and more economic defence of those members charged with offences, and the dust problem. This meeting was presided over by Mr. A. Stanley, M.P., and having regard to the zealous expressions made in Parliament by the motor representatives to protect the public from the reckless motorists' excesses, it is somewhat surprising that this subject was not referred to at the meeting except in reference to public prejudice. We can only trust that the report in the daily press was not a full account of the proceedings. To anyone who studies the police reports it is idle to speak of the exaggeration of prejudice; the public can hardly have dust of that description cast in its eyes as well as the natural article raised by the cars.

The Ventilation of Schools.

AT a meeting of the Institute of Public Health last week a useful paper was read by Mr. J. H. Blizard, which should be noted, on the ventilation of schools and public buildings. The importance of good ventilation for buildings in which children live or work cannot be overrated. The adult is stronger and can recover from the effect of bad ventilation more quickly than the child. Good ventilation in youth, though large numbers of the public do not know it, is of as much importance as good food. Free breakfasts for school children are advocated by people who would keep them enclosed in close buildings for hours. A point of some interest in the paper referred to was the suggestion that classes in schools should in fine weather be held in the open air. This is certainly a matter which might well engage the attention of the Board of Education. It is also desirable that the subject of the paper should be well considered by those who are responsible for the building of our secondary schools.

Public Conveniences.

THE case of the London and North-Western Railway Company *v.* the Mayor, etc., of the City of Westminster, commented upon by us in our issue of March 19, 1904, has been carried to the House of Lords, and the decision of the Court of Appeal has been reversed, Lord James of Hereford alone dissenting. The facts of the case are simple. The Corporation of Westminster, acting as the sanitary authority and under the powers conferred upon them by Section 44 of the Public Health (London) Act, 1891, constructed certain lavatories in the middle of the roadway in the newly-widened thoroughfare at the lower end of Parliament-street. The mode of egress and ingress to these lavatories was by an entrance at each side of the roadway and a flight of stairs leading to a subway which goes through the lavatories. In the first instance these entrances encroached upon the footway, and since the footway is expressly excepted by Sub-section (2) of the above section, Mr. Justice Joyce ordered this part of the works to be removed. The railway company owns certain buildings fronting on Parliament-street, with vaults under the pavement, and they complained that the Corporation, under the Act, had no power to make a subway, and that they had committed a trespass and also obstructed the roadway. The Court of Appeal came to the conclusion that the object of the Corporation had been to construct a subway to facilitate the traffic, and held that this was outside the powers conferred upon them by the statute. The majority in the House of Lords have reversed this finding, holding that this form of access to the lavatory was reasonable and within the discretion of the Corporation to provide, and that it was erected not with the intention of providing a subway for traffic, but simply as a suitable means of access to the lavatories. This decision of the House of Lords is of considerable importance to owners of house property in London; it cannot be questioned, and has to be accepted, but it is obvious that it makes a very considerable

difference to owners having houses fronting the street whether access is made to lavatories in the centre of the road by one shaft above them in the roadway, or by entrances to subways close to the footway opposite their premises.

The Testing of Electric Lighting Mains.

THE decision of the Court of Appeal in dismissing with costs the appeal of the Manchester Corporation in the case of A. H. Midwood & Co. *v.* Manchester Corporation is thoroughly satisfactory. The plaintiffs had sustained damage by an explosion due primarily to a leakage of electricity from the electric mains, and a jury had found that the Corporation were liable for the damage done. The appeal from this decision was made on the ground that the electric lighting supply was being provided under stringent statutory obligations in the best possible manner, and that, as no negligence was proved, the Corporation was not liable. It seems that a leak had sprung between two neighbouring mains embedded in bitumen. Now bitumen, when heated, gives off a gas, and it was doubtless this gas that caused the explosion which damaged the plaintiffs' premises. In order to generate sufficient gas a large leak must have existed for some hours, and the evidence showed that the engineers knew that a leak existed somewhere. If a system had been adopted which enabled it to be localised rapidly the chances of an explosion would have been very remote. A paper read a few years ago by Mr. Wordingham gave the impression that the testing for faults practised by station engineers was of the most rough and ready description. "The best testing apparatus is 3,000 or 4,000 h.p., the best indicator a column of smoke, and the most useful instruments a pick and a shovel." This statement is not meant to be taken literally, but it roughly describes the practice of some supply stations. Great stress was laid by counsel on the difficulty of locating faults in a network of cables, and an attempt was made to prove that the complication of the system was due to the stringent rules of the Board of Trade. These rules insist that the pressure must not vary by more than 2 per cent. from the declared pressure. In other words, a total variation of the light given out by ordinary glow lamps of about 20 per cent. is permissible. It will be seen, therefore, that the rules are far from being stringent. Electric supply companies must arrange their networks so that faults can be detected at once. They must also, as some of them do, maintain a staff who are competent to make the requisite modifications, of the standard methods of locating faults, necessary in special cases.

Disused Burial Grounds.

LAST week some interesting evidence was given in the Consistory Court of London in connexion with the Church of St. Edmund the King and Martyr, in the City of London. A faculty was being applied for to enable the Commercial Bank of Sydney to extend their premises by throwing out a bay window, supported on steel girders, which would cover a space of about 20 ft. of the churchyard at a height of 18 in. from the ground. The County Council opposed the application on the ground that this was a disused burial ground, closed by Order in Council, upon which the erection of any building was prohibited by the Disused Burial Grounds Act, 1884. It appeared that the original church was burnt down in the Fire of London and was rebuilt in 1689, but rebuilt in the nearly unique position facing north and south. Therefore the west end of the old church must have occupied the site which it was now proposed to cover with this projection. The Court, on the question of fact, came to the conclusion that this piece of ground had never been set apart for the purpose of interment, and held that the fact that it formed the site of an old church in which interments had taken place did not render it a disused burial ground within section 3 of the Act, following in this latter finding a decision of the Chancery Division given in 1895 in the case of Ecclesiastical Commissioners and the New City of London Brewery Company.

Barrington Court, Somerset.

THE National Trust are appealing for funds to purchase and preserve an exceptionally fine and interesting Elizabethan house, Barrington Court, in Somersetshire, dating it is supposed from about 1540. This is one of the ⊓-plan houses, and externally a very complete and beautiful example. Unhappily, the interior is not in the same state of preservation, one half of it only being now habitable, and much woodwork having been removed. But there is remaining the complete exterior of a typical Elizabethan house, which is now about to pass into the hands of an owner who is willing to sell it, with 220 acres of land, to the National Trust for 10,500*l.*, and about 1,000*l.* more would be required to put it into good repair and ensure its structural stability. Ten thousand pounds has been offered by one person, on terms which the Trust has agreed to comply with, and the general public are therefore only asked to subscribe the balance, 1,500*l.* We hope this will be forthcoming; but it would have been better, and more likely to gain subscriptions, if the Trust had stated what use they intended to put the house to when bought and repaired. Some persons, we think, will be likely to ask that question before subscribing, and it would have been well to give the information in advance.

The Late M. Henner.

BY the death of M. Henner we have lost a very remarkable figure in the world of art. It is true that of late years he had become rather a mannerist, and that the exaggeration of some of the characteristics which had at first charmed his admirers had been carried so far as to considerably lessen the value of his works. The habit of losing or evading outline in his figures, which originally gave them such a poetic detachment from realism, had been carried so far in his later works that his figures gave one the idea of having been treated by some solvent acid which was dissolving them away. But in his earlier pictures, in which nude figures were combined with an ideal landscape setting, he may be said to have been one of the modern painters who had best achieved the aim of treating the figure as an expressive poem and not as a mere nude study; his pictures of this class, though they have been imitated since, stood at first rather alone in their peculiar idyllic conception; and these earlier works will, we think, always retain their value as examples of poetic expression in painting. A few facts as to his life and works will be found in our Obituary column.

CONGRESS OF THE BRITISH ARCHÆOLOGICAL ASSOCIATION AT READING.

FAVOURED with beautiful weather, which continued throughout the week, the sixty-second annual Congress of the Association was opened at Reading on Monday, July 17. At 2.30 p.m. a large party of members and visitors assembled at the Town Hall, where they were received by the Mayor, Mr. Martin John Sutton, J.P., wearing his gold chain and robes of office, attended by the town clerk and mace-bearer in full regalia. The opening proceedings were very brief, the address being deferred until the evening. The Mayor, having welcomed the Association to Reading in the name of the town with much cordiality, invited the members attending the Congress to a conversazione to be given in their honour in the evening. Mr. R. E. Leader, B.A., in a few appropriate words, thanked the Mayor on behalf of the members of the Association for the kind and hearty manner in which he had received them, and the formal opening proceedings then terminated. Leaving the Town Hall, the party wended their way to the Public Museum, closely adjacent, where they were received by Mr. Alderman Blandy, the Chairman of the Museum and Library Committee of the Corporation, and the curators of the various departments. The museum at Reading is, as Mr. Blandy remarked, in its contents miscellaneous in character, and, like all local museums, necessarily so. The various collections, however, are all rich in valuable specimens, and well displayed and described. The feature of the museum which most appealed to the Congress was, of course, the wonderful collection of objects found during the excavations at Silchester, and known, far and wide now, as "The Silchester Collection." This, said Mr. Blandy, "was not at all miscellaneous, but was, indeed, a very perfect collection of the many objects of interest found at that Roman town."

Mr. Mill Stephenson then very graphically described the work of excavation which was being carried on year after year at Silchester, and indicated the various sites of buildings discovered upon the large scale ordnance map of the town suspended on the walls of the museum, preparatory to the visit of the Congress to Silchester on the following day. He then led the party through several galleries devoted to the housing of the collection, and gave an interesting account of their contents. The collection is one of exceptional interest, he said, inasmuch as they had a great mass of objects all gathered from one site, and of all sorts, though principally of a domestic character.

In the prehistoric department of the museum Mr. Shrubsole, the curator, pointed out some of the principal features of the Palæolithic and Neolithic ages preserved in the numerous cases, which had been found in caves in various parts of the country, and in Belgium, and the South of France. There are no natural caves in the Reading district, but the general type of the relics found is the same for all countries. The Rev. Alan Cheales, the curator of the historical section, also gave interesting information upon the exhibits in his department. Leaving the museum, the party followed the Rev. P. H. Ditchfield, the local honorary secretary of the Congress, and hon. sec. of the Berkshire Archæological Society, to the ruins of the once famous Abbey of Reading, where Dr. Jameson B. Hurry met them, and conducted them round the remains of the buildings. In the south transept of the abbey church Dr. Hurry gave a very lucid, but necessarily brief, history of the abbey, from its foundation

in 1121 by King Henry I. to its dissolution in 1539 by King Henry VIII., and its subsequent spoliation and destruction. To relate the history of Reading Abbey is to relate a large part of the history of England, for numerous Parliaments have assembled here, kings and princes have resided within its walls, and acts and treaties have been dated from and signed at Reading Abbey. Stately have been the pageants which have been witnessed here—John of Gaunt was married here in 1359 to Blanche, of Lancaster, and upon many occasions have the great Barons of England assembled to meet their sovereign within the precincts of Reading Abbey. This great Benedictine Abbey of Reading was founded by King Henry I. in 1121, and received from the king its first charter in 1125. This foundation charter, according to the Rev. P. H. Ditchfield, is unique, as the king had resolved that the building should be carried out on a scale hitherto unprecedented, and it is "the first religious house established on so broad and liberal a basis, and is the forerunner of the extended power given to other monasteries." The abbey was founded for 200 monks, although, probably, so many were never at one time in residence, and the abbey church was only some 50 ft. less in length than St. Paul's Cathedral in London. Its Abbot was mitred, and was third in precedence after Glaston and St. Albans.

There was a great religious revival movement in the time of Henry I., and it is thought that the king was influenced to a considerable extent in the foundation of the abbey, by his remembrance of Bishop Anselm, whom he respected as a scholar and a saint, as also by the loss of his only son, Prince William, in 1120. He, with the great officers of state, attended the consecration of the abbey, which was solemnised by Thomas à Becket. The charter granted to the abbey conferred very great powers upon the Abbot. He was allowed the privilege of minting money, and was granted the power of elevating to the Order of Knighthood, and he exercised great power over the townsfolk, sometimes not over-wisely, as is evidenced by the serious quarrels which from time to time broke out between them. Even the right of electing the mayor and burgesses of the town rested with the Abbot, and it was not until the reign of Henry VII., according to Mr. Ditchfield, that the latter were allowed to elect three persons, one of whom the Abbot appointed to the office of mayor. The monastery was dissolved by attainder in 1539, and its last Abbot with two of his monks suffered death by being hanged outside the abbey gate.

Vast piles of flint rubble walling alone remain to testify to the existence of this once magnificence abbey. The ruins have been stripped in past years of almost every portion of facing stone, but now they are carefully protected by the Corporation, and the remains of the various buildings are indicated by labels attached to the walls, so that by their aid, and a study of the carefully-prepared plan of the complete buildings, together with the chart and lists of the Abbots, which have been framed and glazed and placed within the ruins by the generosity of Dr. Hurry, the visitor may reconstruct, in imagination, for himself the appearance presented by this glorious abbey in the days of its splendour. The revenues of the abbey at the dissolution were assessed at the large amount of 1,938*l.* 13s. 3½d. The monastery occupied an area of about 30 acres, enclosed on all sides but the south by a high wall, on the south the streams the Kennet and the Holy Brook formed the boundary.

After a hearty vote of thanks to Dr. Hurry for his most interesting description, the party proceeded to the abbey gateway, the principal entrance to the abbey in olden times, now the headquarters of the Berks Archæological Society, where Mr. Ditchfield, Dr. Hurry, and Mr. Keyser explained many interesting features and objects preserved there. In the vicar's garden adjacent to the gateway the visitors were shown several architectural fragments from the ruins of the abbey. The church of St. Lawrence was next visited, and was described by Mr. C. E. Keyser, the President of the Berkshire Society. This is the municipal church, and stands partly within and partly without the abbey precincts. It is a Perpendicular church, dating from 1434, the arcade between the nave and aisle having elaborate canopied niches between the arches. There are some monuments and some good bench-ends in the chancel, and several brasses, one of which to John Andrews, a priest, is dated 1428. In a framed hinged case on the north-west wall of the chancel arch is preserved the well-known palimpsest brass of Sir John Popham, 1463. Attention was directed to a curious incised mark upon the stone of the interior of the tower, resembling the ragged staff of the Warwick arms, and this marking is repeated seven times in the height of the tower. It had been thought by some to be a mason's mark, but Mr. C. Lynam here pointed out that mason's marks were always geometrical. A brief visit to the church of the Grey Friars brought the work of the afternoon to an end. The mendicant Grey Friars, to which order this church belonged, appear to have been established in Reading about 1233, and some years later they erected the Friary buildings upon this site, which had been granted to them by the abbey. After the confiscation by Henry VIII., the church was granted to the Corporation for use as a Guildhall in 1543, and in 1613 it was transformed into a Bridewell, and as such continued to be used down to 1860, when the late Archdeacon Phelps was mainly instrumental in rescuing it from further desecration, and restoring it to sacred use. The older part of the church is but a fragment of the ancient edifice, but is a very fine example of early decorated work.

At 8.30 p.m. the members and visitors were received by the Mayor and Mayoress at a conversazione in the large town hall, where a large number of guests were gathered to meet them, over 1,000 invitations having been issued. In the course of the evening Mr. C. E. Keyser, Chairman of the local committee of the Congress, delivered the inaugural address, which dealt in a very full and very scholarly manner with the history of the town and the various places to be visited by the Congress during the week, and it was much appreciated by the large audience from the admirable way in which it was delivered. A very hearty vote of thanks was unanimously accorded to Mr. Keyser upon the motion of the Mayor.

TUESDAY, JULY 18.

Leaving the Great Western station this morning a few minutes before nine o'clock, the members of the Congress reached Mortimer station a little later, and took carriages for the drive to the old Roman city of Calleva Attrebatum, the modern Silchester. Here they were met by Mr. Mill Stephenson, who supplemented his remarks at the museum on the previous day by a very clear and full description of the ancient city as it must have been in the days of its prosperity, from the revelations disclosed by the pick and spade. A large number of plans and drawings illustrated his address, which was listened to with great interest and pleasure by the assembled company. The amphitheatre was first visited, now simply a grass-grown mound of earth, but having its outlines still traceable. Some portions of the city walls were inspected, but, owing to the standing crops of oats and barley, it was impossible to traverse the entire area of the city, which occupied more than 100 acres within the walls. The walls in places were 9 ft. in thickness, and the highest part remaining was about 16 ft., but the total height would probably never be ascertained. The circuit of the wall was about one and three-quarter miles. The remains of the Forum, the shops, ambulatories, and Basilica were fully explained, together with the position of the Christian church at the south-east angle, and, following Mr. Stephenson, the party was then conducted to that portion of the site where the excavations are at present in progress. These consist of the walls of a house of the corridor type, with the usual square, or oblong, apartments, and a tessellated pavement, but of an unimportant character, having been composed of inferior material, so that much of the tesseræ had become decomposed. In the middle of one of the square chambers a large oak tree is in full vigour. From the mounds of earth thrown out of the excavations the visitors had a capital view, and were well able to follow Mr. Stephenson's description of the system pursued in carrying out the excavations. Some other portions of walling just discovered in a ditch by the side of the approach road were noticed, but it was not possible to give, at present, any explanation about them. Speaking of the destruction of the city, he said there was a legend that Calleva was destroyed by fire, but there was not the slightest evidence of there having been a general conflagration. No human remains had been found. In the houses they very rarely discovered anything at all, and everything pointed to a gradual abandonment of the city. This was emphasised by the blocking of the gates. One gate was blocked up with material taken from the Basilica, which showed that the Basilica must have been in ruins at the time the gate was blocked. Speaking of the Basilica, Mr. Stephenson spoke strongly of the condition into which the ruins had been allowed to get, which, he declared, was a disgrace to the nation, and the meeting indorsed his remarks. A vote of thanks to Mr. Stephenson for his courtesy and of appreciation of the able manner in which he was conducting a national work in the scientific exploration of this most important and interesting memorial of the Roman occupation of Britain was passed by acclamation. The party then resumed their carriages and departed for Pamber Church, which was described by Mr. Keyser. This church was originally the Priory Church of Sherborne, an alien priory, and the parts now remaining are the tower and eastern arm of what was a cruciform building of the XIIth and XIIIth century dates. Some portions of the walls of the nave remain, but the western arch of the tower has been filled up, and now forms the western end of the church, with a doorway in the middle. There are some interesting monuments, especially an effigy, in wood, of the son of the founder, Sir H. de Porte, circ. the end of the XIIIth or beginning of the XIVth centuries. There are also four coffin-slabs within the sanctuary rails, two on either side of the altar, on one of which is the inscription, "What we are, this man was, and what he is, we shall be." A curious wooden almsbox, of large size, massive, and of early date, is attached to one of the bench-ends on the south side. The drive was resumed to Aldermaston, where, at Aldermaston Court, the charming residence of Mr. Keyser, the members and visitors were hospitably entertained at luncheon in a large marquee erected on the lawn. After luncheon had been done justice to, and the kind hospitality of Mr. and Mrs. Keyser acknowledged by a hearty vote of thanks, Mr. Keyser gave a fascinating and descriptive history of Aldermaston and the estate. Great historical interest attaches to the estate, which was a manor of considerable importance at the time of the Norman Conquest, as is shown by the Domesday Book. The name itself suggested Alderman or Ealdermanstown, an officer who was equivalent to the Lord-Lieutenant of the county at this day. It was one of the many possessions of Earl Harold, and after his death at Hastings it was annexed by William the Conqueror. It is said that the uncultivated portion of the estate formed a portion of Windsor Forest, and there still exist some magnificent oak and other trees of great age and enormous girth, some of the oaks especially being 800 to 1000 years old. In a very interesting manner, Mr. Keyser related the descent of the estate from the time of Henry I., who granted the manor to one of his knights, Sir Robert Achard, with whose descendants it remained until about 1358, when it passed to the family of De la Mare by marriage of the daughter and heiress of the last of the Achards to Sir Thomas de la Mare. From this family the manor passed, again by marriage, to the Forsters, Sir George Forster being Sheriff of Berkshire and Oxfordshire in 1516. In 1711 this family became extinct, and the estate passed to the Congreves, and from them, in 1846, by sale to Mr. Higford Burr, the predecessor of Mr. Keyser. The present mansion is of modern date in the Elizabethan style, but preserves within it the grand and elaborately carved staircase saved from the old house, which was almost entirely destroyed by fire in 1843. After viewing the house and some of the artistic treasures preserved within it, and the lovely gardens and grounds, the party strolled over to the church, which is situated in the park, not far from the house. An unusual

feature in connection with the church is that it is neither a rectory nor a vicarage. It was originally included in the grant made by Henry I. to Robert Achard, but was given in the next reign by William Achard to the monks of West Sherborne, and this grant was confirmed by his son, and, in return, the prior and monks were bound to provide a chaplain. After the suppression of the monastery, the Chapel of Aldermaston, with the estates of the dissolved priory, were given by Edward VI. to Queen's College, Oxford, but in 1567 William Forster obtained from the college a lease of 500 years at a small quit rent, and so acquired the right of nominating the minister. William Congreve purchased from the college all their interest, and thus it remained until a few years since, when institution by the Bishop was arranged for. There is much of interest in the church to repay careful observation. Exceedingly uncommon features are the so-called low-side windows and two high-side windows. There is some ancient wall painting, particularly a painting of St. Christopher. To enable this to be seen from the outside, one of the low-side windows is said to have been formed. Early and late Norman features are to be seen in the west door. Some brasses of the XVIth century to the Forster family are preserved in the church, but the chief monument is a magnificent altar tomb with recumbent effigies of Sir George Forster and lady (Elizabeth de la Mare) exquisitely worked in alabaster. The knight is in armour and wears the collar of S.S., while the lady has at her feet a little pet dog, which is biting the hem of her dress. On the sides of the tomb, under canopies, are represented twelve sons and eight daughters. The whole monument is but slightly damaged, and for so late a date, 1526, is a careful and beautiful piece of work. The church has been adorned with mural decoration in an artistic way by the taste and liberality of Mr. Keyser Padworth Church was next visited. There is no special history attached to this church, but it is a charming little gem of a village church of late Norman date, with apsidal end to chancel and beautiful carved capitals to the chancel arch. There is a Norman piscina and north and south doorways of good character. Some interesting and curious wall-paintings have lately been discovered in the chancel, and on the jamb of the chancel arch, of the XIIth century, St. Nicholas being one of the figures represented. There was originally a very good font, of which a sketch is preserved in the British Museum, and Mr. Keyser expressed the opinion that it was probably buried beneath, or near to, the present one, which was an old religious custom. In the churchyard Mr. Walter Money gave some particulars of an engagement which took place in the lane, close by, between the Royalists and Parliamentarians, in 1643, in connection with a stone in the porch, which commemorates the event and the nameless dead soldiers who fell in the encounter in Aldermaston Lane. Proceeding on their way, the party reached Ufton Court between 3.30 and four o'clock, where they were received by Miss Sharp, who has written and published a valuable history of this most interesting old manor house, from which she read extracts in giving the description of the house. The house was built in the latter half of the XVIIth century by Lady Elizabeth, widow of Sir John Marvyn, and is in the form of the letter E. with modifications, and is three stories in height. Some parts of the house are of older date, but the greater part is Elizabethan, and the fine ceiling of the great hall is of that period; the only original panelling is in the library. When Lady Marvyn purchased the property in 1568 it was in the possession of Richard Parkyns, whose ancestors had been lords of the manor of Ufton from about 1400; she married him, and died there in 1581. In the time of Queen Anne the north projection of the house was altered in the style of the period, with long windows and sashes, and the interior of the apartments on that side still contain the plaster ceilings and fittings of that date; but the exterior has been restored to correspond with the south projection, which is original, with features of later date, such as the leaden water-spouts, which are dated 1664. The alteration in Queen Anne's time seems to have been made to suit the taste or meet the requirements of a celebrated lady with whom the house is intimately associated, the heroine of Pope's "Rape of the Lock," Arabella Fermor, who married a Francis Parkins in 1715. Ufton Court is one of the many mansions in the country which afforded refuge to the adherents of the ancient Faith, and it is honeycombed with hiding-places, in which the recusants were concealed in periods of danger and trial. Some of these were open for the inspection of the party and were viewed with very great interest. The oratory, priest's chamber, chapel, and long gallery were also visited by the kindness of Miss Sharp, who herself conducted the members in parties of ten at a time, owing to the narrowness of the passages and the intricacies of the plan of the house. The spring locks of some of the hiding-places are very curious.

Leaving Ufton Court with some regret, its picturesque gables, brown woodwork, overhanging windows, and mellow-toned, rough-cast walls showing charmingly in the evening sunlight, Reading was reached somewhat after seven o'clock. At the meeting after dinner, in the large room of the hotel, Mr. Emanuel Green presided, and a capital paper on "Some of the Brasses of Berkshire," was given by Mr. Andrew Oliver, which was well illustrated by many excellent rubbings. In the course of his remarks, Mr. Oliver said that Berkshire, as a brass country, did not possess many of great interest or importance. There were in all about 200 examples, and the greatest number were of the XVth and XVIth centuries. There were very few of the XIVth century; the only one of that date of any importance was at Bray, which represented three figures supported on a bracket with a fox at the foot. Mr. Oliver divided his subject into several headings, and dealt with each most fully. A short discussion followed the paper, in which the Rev. P. H. Ditchfield, the Rev. C. H. Evelyn White, Mr. E. Green, and others took part.

WEDNESDAY, JULY 19.

Members had previously been informed, and the programme reminded them, that the excursion to-day was to King Alfred's Country and the Berkshire Downs, and that, owing to difficulties of transit, the members must be limited to sixty. Leaving Reading by the Great Western line at 8.50, the party reached Newbury at 9.31, and changed into a special train for the little town of Lambourn, where they arrived about 10.15. Carriages were at once taken, and the party proceeded to the church, where they were received by the vicar (the Rev. Reginald Bagnall), who gave a short account of the edifice. The church is one of the finest in Berks, of late Norman date, about 1170. There are two chantry chapels belonging to the Estbury family; that on the south of the chancel is dedicated to St. Mary, is in the decorated style, and contains the tomb of the founder, John Estbury, with his memorial brass and coat-of-arms enamelled. The other chapel is dedicated to the Holy Trinity, and contains another altar tomb to the son, also John Estbury, who founded a hospital near the church for ten poor men, and the bedesmen assemble here every morning round the tomb for Divine service in commemoration of the founder—a curious and interesting survival of pre-Reformation custom. There is a fine altar tomb in the north transept, with alabaster effigies of Sir Thomas Essex and his wife, dated 1558. Leaving the church, the party followed the vicar to view the site of the palace of Canute and the market cross. The next halting-place was at Ashdown House, by permission of Lady Wantage, where the visitors viewed the numerous Sarsen stones scattered about on the turf, and then made their way onward to Wayland Smith's cave, which, Mr. Walter Money said, was simply a denuded, chambered, long barrow, with an encircling ditch, of the Palæolithic Age, having a kistvaen of stones to protect the place of interment. Mr. T. White said the tradition of the Wayland Smiths was known in Scandinavian countries and in Germany. They are traditionally reputed to have lived underground, and travellers, whose horses had lost shoes, had only to place some coins on a suitably-placed flat stone, retire to a safe distance and forbear to look on, and, after a while, they would find the horses shod and the money gone. Wayland Smith's cave, he said, was mentioned as a boundary in an Anglo-Saxon charter of Eadred, in 955. Owing to the difficulties of transport, as before mentioned, luncheon had to be of a very slight nature, which members had to carry with them in the shape of sandwiches, etc. These having been dispatched while the party rested on the slope at the head of the "Giant's Stairs," near the "White Horse," Mr. Theodore White gave an account of Uffington Castle, an oval earthwork of great dimensions, the highest point of which is 893 ft. above sea level. A most extensive and beautiful view is obtained from this elevated and breezy point, reaching, it is said, into ten or twelve counties. Mr. White related the tradition of the "White Horse" which is believed to have been cut by order of Alfred the Great to commemorate the great battle of Ashdown or Æscesdune. Mention of the Uffington "horse" was found in very early documents, and he was of opinion that it had been there for 1,500 years, and was, therefore, much older than Alfred's time. The figure of the horse covers over an acre of ground, and is 374 ft. in length. Progress was now made to Sparsholt, stopping for a minute or two at the well-known "Blowing Stone," Sparsholt Church being described by Mr. Keyser. The vicar (the Rev. F. A. P. Shirreff) received the party. Mr. Keyser pointed out the curious wooden effigies, two of which are of females, veiled and wimpled; the others, also of oak, are of knights, one cross-legged. All are of the decorated period, and are thought to be of members of the Achard family, as is the tomb in the chancel, to Sir Robert Achard. The church is almost entirely of the decorated period, and possesses many features of much interest; but time passed, and the express train, which had been arranged for to stop at Wantage Road Station, was due there at 5.22, so departure had to be hurried, and Childrey Church, with its numerous brasses, some twelve in number, of the XVth and XVIth centuries, had to be passed unvisited. Reading was reached about six o'clock. At the evening meeting a paper was read by the Rev. J. C. Field on "The History of Wallingford," preparatory to the visit on the following day. A paper on "The Walls of Wallingford" was also read by Mr. J. C. Gould.

THURSDAY, JULY 20.

After the fatiguing excursion over the Berkshire Downs of yesterday, the programme to-day was restful and very enjoyable. Leaving Caversham Bridge about 9.30 on board the steam launch "River Queen," the party, of about seventy members, proceeded by river to Wallingford, where they were met by the Rev. J. E. Field and the Rev. A. W. Deacon and others. After luncheon, brief visits were paid to St. Leonard's Church, which was described by Mr. Field, to an interesting old monastic building of the time of Henry VII. known as St. Lucian's, to St. Mary's Tower, the earthworks and moat in the Kine Croft near the railway station, and then to the ruins of the Castle of Wallingford, where Mr. I. C. Gould gave a very interesting historical account of the fortress to which the Empress Maud, mother of Henry II., fled when she escaped in the snow from Oxford Castle. The Castle of Crowmarsh Gifford, which was built by Stephen on the other side of the river, was intended to be visited, but time, again, was too short, and it had to be omitted, as the launch had to leave punctually at 4 p.m. for Reading, which was not reached until past 7. At the evening meeting, at 8.45, a paper was read by the Rev. P. H. Ditchfield on "The History of Abingdon," the famous monastic town to be visited the next day. This paper, though filled with historical information, is written in such picturesque language that it is most entertaining.

FRIDAY, JULY 21.

The members of the Congress, to the number of eighty, left Reading by Great Western train at 9.51 for Culham, where, at 10.39, carriages were waiting to take them to Sutton Courtenay Grange, by permission of Captain Lindsay. The manor of Sutton Courtenay was early in the possession of Abingdon Abbey. The old manor house, now the residence of Captain Lindsay, was considered by Mr. C. Lynam and other authorities present to have originally been a Norman chapel attached to the manor

house. A passing visit was paid to the church, and the drive continued to Abingdon, which was reached half an hour in advance of scheduled time—an unusual occurrence. In the Council Chamber of the Guildhall, which adjoins the old abbey gateway, the party was received by the Mayor and Mayoress, some of the aldermen, and the town clerk, and then inspected the fine collection of valuable Corporation plate, which was described by Alderman Harrison. Amongst the rarer objects, are the maces of Charles I., Charles II., given at the Restoration, 1660—noticeable from the fact that in the inscription the Commonwealth is entirely ignored—and James II. The most valuable of all the maces, however, is one of the time of Edward VI. or Elizabeth. There are two fine silver chalices of the XVIIth century, and the seal of the Corporation, dated 1605. There is also a "Whistling Cup," dated 1658. Upon another table were laid out the valuable charters, ten in all, the oldest granted in 1555 by Philip and Mary. They were described by Mr. Challoner (the Town Clerk). The first charter gave to the town two members of Parliament, who were to be maintained by the borough. Amongst other objects exhibited were some old minute books and books of ordinances and orders, and building by-laws, from which it appears the Corporation had power to establish an infectious hospital and to take disinfecting measures in the year of the Great Plague; laws for the prevention of fire, and ordering that furze and fern should be stored in safe premises, and that every burgher should keep a club for the preservation of the peace are amongst these old ordinances, showing that the town of Abingdon was a good place to live in and its Corporation a very enlightened body in the XVIIth century. Luncheon was partaken of in the great Council Chamber, the Mayor presiding. The walls of this fine apartment are adorned with portraits of King George III. and Queen Charlotte, by Gainsborough, a large St. Sebastian, considered to be by Van Dyck, and other life-size portraits of Charles II. and James II., etc. Under the guidance of the Rev. P. H. Ditchfield, the party, at 2.30, proceeded to inspect the remains of the abbey buildings, which were described to them by Mr. Redfern, the architect, who was entrusted with their preservation by the Corporation, whose property they now are. Mr. Redfern kindly came down from London on purpose to meet the Association and point out what was most interesting of the remains. Of the abbey, which Leland saw and described in the time of Henry VIII. as a magnificent pile, the grand Abbey Church has completely vanished. The remains of the conventual buildings are very few. The buildings, Mr. Redfern said, had been for very many years used as malt-houses and other purposes, and their original uses could not be made out. Recent exploration has, however, enabled their purpose to be stated with reasonable confidence. The chief remains consist in what he believed to have been the exchequer of the abbey, the infirmary, and, perhaps, some portion of the prior's lodging. In the first of these buildings, the ground story is vaulted in four compartments from a central column; the upper floor has the remains of a fine hooded fireplace, and outside is a chimney with three lancet-shaped openings. Adjoining this building is a long building, over 100 ft., of two stories, with galleries into which the several chambers opened. The upper floor appears to have been divided into two large rooms, with several dormitories. It has an open-timber roof, in good condition, and, apparently, of the first years of the XVth century. This famous abbey was dissolved in 1538, and its revenues were assessed at 1,876*l.* 10s. 9d. The church of St. Nicholas was next visited, and described by Mr. West, its one churchwarden. The church adjoins the abbey gateway, and, as at Reading, stands partly within and partly without the abbey precincts, which is the reason why, it is said, it has only one warden, the monks, to whom the choir belonged, not, of course, requiring a churchwarden. The tower is built partly on the west wall and partly on piers within the church, and dates from 1485. The west front has, on the lower stage, a late Norman arcade, the centre arch forming the doorway. On the inner face of the west wall, just inside the porch, is a stone niche for a lantern, some 7 ft. or 8 ft. above the floor. At the church of St. Helen, next visited, the principal features were described by Mr. Keyser. This is a very large and fine building, consisting of a nave and four aisles of the Perpendicular Period, with a graceful spire, with delicate, angular, flying buttresses, which is a well-known river landmark. It is called the church of five aisles, as they are all about the same width. The numerous aisles have each a distinctive dedication, viz., Jesus Aisle, Our Lady's Aisle, St. Helen's Aisle, St. Catherine's Aisle, and the Aisle of the Holy Cross. They owe their existence to the various guilds which existed in the town. From St. Helen's the party went to the adjacent Christ's Hospital—a long and picturesque building of wood and brick, with open-timber gallery, into which the several dwellings open. In the Council Chamber, used also as the chapel, were laid out for inspection several old tomes, dating from 1553. These and the buildings were examined under the guidance of Mr. Baker and Mr. Morland (Trustees of the Charity), which supports more than forty inmates. This visit ended the day's proceedings, and the party returned to Reading by the 4.47 train, reaching their headquarters about 6.15. At the evening meeting a paper was read by Mr. Childs (Principal of University College, Reading) on "The Place of Reading in the National History," and another on "The Commercial Aspect of Reading in the Middle Ages," by Mr. C. J. Williams (the Hon. Secretary of the Congress).

SATURDAY, JULY 22.

This was the concluding day of the Congress, and the morning only was devoted to archæology. A visit to Newbury, Shaw House, and Donnington Castle was arranged for under the capable guidance of Mr. Walter Money, F.S.A. At Donnington Castle the party were to be entertained at luncheon by Mrs. Spurling, and afterwards return to Reading for the special general meeting at the hotel for the election of members and the concluding business of the Congress, which has proved so agreeable and satisfactory. The Hon. Congress Secretary (Mr. C. J. Williams) is to be congratulated on the success which has attended upon his energy in the organisation of all the arrangements, which, however, without the hearty co-operation of Mr. Keyser, the chairman, and the Rev. P. H. Ditchfield, the Hon. Secretary of the local Committee, aided by the willing efforts of all who had assisted on that Committee, it would have been next to impossible to achieve.

CHEAP COTTAGES EXHIBITION.

AN exhibition of cheap cottages has been arranged at Letchworth (Garden City), Hertfordshire, and on Tuesday it was officially opened by the Duke of Devonshire, in the presence of a large number of people. Earlier in the day Sir William Foster laid the foundation-stone of the city's first public building—*i.e.*, the entertainment and lecture hall, in memory of the late Mrs. Ebenezer Howard. The edifice will be constructed at a cost of about 1,200*l.* As to the cottages, a large number have been erected, many of them of an interesting character, and next week we hope to devote an article to them.

At the opening ceremony, Mr. St. Loe Strachey, who presided, said that they were indebted to the Duke of Devonshire for his encouragement of the movement, to Mr. Neville, and to the First Garden City Company for all they had done for the exhibition, to Mr. Cooper, the secretary, and Mr. Adams, the manager of the First Garden City. In conclusion, he asked the Duke to accept the book of the Cheap Cottages Exhibition, offered by the committee, as a small memorial of the exhibition. They trusted that that catalogue, which gave plans and specifications and details of all the cottages exhibited, would prove useful to those who were not able to come and see the cottages for themselves, and that people from all parts of the United Kingdom might be able to get from it information as to the means and methods of cheap cottage construction.

The Duke of Devonshire said that the exhibition must be one of very greatest interest to everyone who was connected, directly or indirectly, with the land. It was of interest to the largest class of those who were connected with the land—the class of agricultural labourers—for it was most important to them that they should live in decent and well-built houses provided for them at a moderate rent. It was important also to the tenant farmers, because one of their chief interests must be the obtaining of labour, and efficient labour, for the cultivation of their holdings; and that efficient labour could not be obtained unless suitable and decent habitations were provided for the labourers. Lastly, the exhibition was of great interest to landlords with a view to the proper management and administration of their estates. He thought it was only fair to English landlords to say that he believed there were very few of them who looked upon their estates merely as a source of revenue. One of the great difficulties which confronted landlords who wished to do their duty by their neighbours, by the residents on their estates, had been of late years the provision of suitable houses. The old miserable agricultural villages had, to a great extent, been swept away, and however excellent their intentions might be, some landlords had found and were finding, a very great difficulty in providing from their now somewhat limited resources the necessary capital expenditure for building new houses. To them, therefore, also, it was most important that every possible means should be discovered by which the almost prohibitive cost of housing the labourers on their land might be, at all events, materially reduced. That exhibition had an interest, and ought to be of interest, he thought, to an even wider class. We heard a great deal in these days of the migration of the people from the country to the towns. The census returns showed that, whereas fifty years ago about half the population of our country lived in the country, at present 77 per cent. of them lived in urban districts. He was not one of those who considered that this migration, this change in the distribution of our population, had been an unmitigated evil. When we considered the miserable condition of a large part of the rural population fifty or sixty years ago, we must consider it rather pleasing that a large number of them should have transferred themselves, not necessarily to overcrowded towns and cities, but very largely to new towns and villages which had grown up, and to populous industrial districts. They had transferred themselves to localities where they were able to obtain better wages, and, in many cases, he doubted not, find better houses. So far this migration had not been altogether an evil; but so far as it had been a migration from healthy country districts to the overcrowded slums of the city, that, on the other hand, had been, he thought, an unmitigated evil. He was afraid there was too much evidence to show that this had been and was still going on, with a disastrous effect on the health and the physique of a portion of our people. There were many causes which had tended to draw away the people from the land. The housing question was not the only one. But there was no doubt that the question with which they were concerned that day—the housing question—was one, at all events, of the forces which had exercised a powerful influence in drawing labourers away from the land and crowding them together in our towns. The problem which the committee of that exhibition was attempting to solve was that of ascertaining whether it was possible to build decent and serviceable cottages and houses at somewhat less than the present cost. Most landlords had, he believed, found, as he had found, that it was very difficult to build a good cottage much under 300*l.*, or, say, 500*l.* for a pair of cottages. That meant a rent of 10*l.* or 12*l.* a year if the capital expended was to have any adequate return; and that, he need not say, was a larger rent than most agricultural labourers were in a position to pay. It was alleged by men who, he believed, were practical men, that it was perfectly possible to build a house which should be fit for habitation, which should be decent, and not too unsightly for a sum not exceeding 150*l.* If that was the case, and if it was found through that exhibition that it was possible that that should be done, they would have done a great deal, not perhaps altogether to solve, but to assist in the solution of the

housing question. He did not say, even if they could build cottages at 150*l.* apiece, or something like that sum, that it would be a very remunerative outlay of capital for the landlord; but he thought it was not the landlord's only desire to get a good return on his capital expended in that way, but that many landlords would attack the problem of the housing of their people if they could do it without a loss which made it prohibitive. He hoped, then, that that exhibition would receive a great deal of attention from practical men. They must know, however, that those cottages were not only all that was required in appearance, but also they must call in experts to say whether they would afford adequate protection against the heat and cold and damp of our climate, and what was, perhaps, still more important, whether they would be built under conditions of sufficient durability. The landlord had not only to build the cottage, but he had also to maintain it; and it was perfectly possible that the cheapest outlay of capital at the beginning might not prove to be the cheapest in the end. They must all join in the expression of thanks to the Garden City Company for the assistance that they had given in establishing that most interesting exhibition. It was not a collection of model cottages which were to be shown to-day and which would disappear to-morrow. It was a collection of cottages which would be put to a practical test; cottages which would be inhabited; real cottages which would be inhabited by real men and women and children. It would be competent for all whom he was addressing to come there next year or the year after, and he hoped for many years, and to see whether those cottages were satisfactorily fulfilling the promise with which they had been built. He could not help thinking that that experiment was one of a most interesting character; and he heartily congratulated the committee of the Garden City Company on the interest which, as evidenced by the numerous audience he had the honour to address, that experiment had aroused. He had much pleasure in declaring that exhibition open.

Mr. Neville, K.C., moved a vote of thanks to the Duke of Devonshire, which was seconded by the Bishop of Hereford, and supported by Lord Crewe, and carried unanimously.

The Duke of Devonshire, in reply, said that he had forgotten to mention that that exhibition, in addition to its other recommendations, might be very useful in the discussion of a question which evidently excited a good deal of interest in the minds of a good many of those present—the question of the building by-laws. He did not mean to go into that question on that occasion. The intention of those by-laws was, no doubt, excellent, and he was sure that all of them would desire that the by-laws should provide for everything which should lead in a sanitary direction to preserving the health of the people. But the question, he took it, was whether the by-laws were not, in too many cases, adapted rather to the wants of the towns than of the country, and whether they did not, in too many cases, entail an unnecessary expense on the building of cottages in the country. If it was true that many of the cottages they had seen that day could not have been built in many districts owing to the by-laws, and if those cottages were found to answer all necessary, reasonable requirements, then he thought that some revision of those by-laws, excellent as their intention was, might become necessary.

A vote of thanks to Mr. St. Loe Strachey for presiding brought the proceedings to an end.

A series of conferences, under the auspices of the National Housing Reform Council, will be held during September at the Cheap Cottages Exhibition, First Garden City, Letchworth. On September 16 there will be a National Conference of Urban Authorities, to consider—(*a*) The better planning of new housing areas; (*b*) the designing and erection of cheap and artistic cottages. On September 23 a Rural Housing Conference, under the auspices of the National Housing Reform Council and the Rural Housing and Sanitary Association, to consider—The reform of rural by-laws and the building of cottages in rural districts. On September 30 a National Conference of Workmen's Associations.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS:

THE MIDSUMMER EXAMINATIONS.

Preliminary.

THE Preliminary examination, qualifying for registration as Probationer R.I.B.A., was held in London and the undermentioned provincial centres on June 6 and 7. Of the 245 candidates admitted, claims for exemption from sitting for the examination were allowed to the number of fifty-three. The remaining 191 candidates were examined, with the following results:—

District.	Number Examined.	Passed.	Relegated.
London	78	48	30
Belfast	1	1	—
Birmingham	8	5	3
Bristol	15	11	4
Cardiff	7	2	5
Glasgow	6	4	2
Leeds	26	17	9
Manchester	31	14	17
Newcastle	19	15	4
	191	117	74

The passed candidates, with those exempted—numbering altogether 170—have been registered as Probationers. The following are their names and addresses:—

Adams, W. N., Liverpool
Allan, J. A., Aberdeen
Allan, T. S., Glasgow
Allen, S. P., Cheddar, Somerset
Archer, C. S., Johnstone, N.B.
Arnott, C. D., Gorleston-on-Sea
Arthur, G. T., Redfield, Bristol
Aynsley, J. T. O., Sunderland
Ayre, D. W., Cork
Badcock, W. F. E., Thornfield, Bishop Auckland.
Bain, V., Sunderland
Banks, W. A., Stafford
Banks-Smith, S. R., St. Leonards-on-Sea
Barrow, T. H., Camberwell, S.E.
Batty, W. A., Wolsingham, co. Durham
Beal, J. K., Newcastle-on-Tyne
Beetham, B, Darlington
Bell, W., Bradford
Bennett, T., Gravesend
Binnie, W. B., Airdrie
Blackmore, A. C., Cottingham, E. Yorks
Bramwell, G., Gargrave-in-Craven, Yorks.
Brett, W. G., Clevedon Somerset
Brittan, H. W., Croydon
Brock, A. St. H., N. Cheam, Surrey
Brodie, J., Edinburgh
Broomhall, T. H., Haigh, near Barnsley
Brown, W. G, Leighton Buzzard
Bryett, A., Greenheys, Manchester
Burgess, S. H., West Hartlepool
Butlin, P., Rothwell, Northants
Caithness, W. W., Ealing, W.
Champion, H. D., Balham, S.W.
Chippindale, H. M., Scholes, near Leeds
Christie, C., Falkirk
Coates, P., Sheffield
Cole, A. V., Watford
Colville, D. Aberdeen
Cook, W. B., Huddersfield
Coombs, G. J., Boscombe, Bournemouth
Coyle, F., Blackhill, co. Durham
Craddock, R., Wolverhampton
Crook, R. H., Birkdale, Southport
Davidson, J. A., Knock, co. Down, Ireland
Dewhirst, R. H., Harrogate, Yorks
Doggett, F. A. B., Cambridge
Durrant, A. M., Hemel Hempstead
Eckstein, T. C., Wolverhampton
Emery, B. J., Lowestoft
Emms, H. D. H., South-end-on-Sea
Fetherstone, R. W., Canterbury
Fisher, W. S., Hatton Park, Wellingborough
Fitzgerald, G. E., London
Fletcher, E. G., Ulverston, Lancashire
Fourdrinier, N. D., Brook Green, W.
Furniss, R. W., Loughborough
Garrow, R. T., Aberdeen, N.B.
Godfrey, H. V., Shepherd's Bush W.
Gray, J. H., London
Green, W., jun., Aberdeen
Greig, S., Clapham Common
Grieves, H., jun., South Shields
Griffin, F. V., Ealing, W.
Grissell, F., Notting Hill Gate, W.
Ground, J. K, Wandsworth Common, S.W.
Ap Gruffydd C. O., Wellingborough
Hadwen, N. W., London
Hagell, F. W., Whitehall Park, N.
Hall, E. S., B.A., West Dulwich, S.E.
Hall, H. S., Nottingham
Hallatt, C. A., Wath-on-Dearne, near Rotherham
Hanton, P. K., Islington, N.
Harrison, W. H., Whalley, Blackburn
Hartland, K. W., Clifton, Bristol
Hawkins, E. H, Southampton
Heath, F., Warsop, near Mansfield
Heelis, J., Bolton, Lancs.
Henson, F. E., Wellingborough
Hindmarsh, J. R., Newcastle-on-Tyne
Hinton, J. G., Exeter
Hooper, C. O., Southampton
Howitt, T. C., Hucknall Torkard
Hughes, A. E., Newark-on-Trent
Jackson, W. H., Balham
Jeffery, R., Ashford, Kent
Jew, R. E. T., Reading
Johnson, L. P., London
Kaula, W., South Hampstead
Knapman, H. L., Primrose Hill, N.W.
Kohler, H. F., London
Legat, C. S., Sunderland
Lucas, J. D., Send, Woking
McAleer, J. C. O'C., Workington
Marshall, F. W., Solihull, near Birmingham
Masters, F. N. D, Doncaster
Maxwell, F. J. McC., Bedford Park
Mayhead, R., Reading
Medley, C., Keighley
Mennie, F. E., Mile End, E.
Michalowsky, H., Dalston, N.E.
Mills, W. S., Leicester
Monk, H., West Auckland, Durham
Morgan, D. H., Aberdare
Nairne, G. C., Inverness
Needham, T. H., Acton
O'Reilly, H. W., Cheltenham
Owen, O. L, Swansea
Page, W. McP., Earl's Court, S.W.
Perry, H. C., Bournemouth
Peto, A. N., Leeds
Pocock, J. C., Chiddingfold, Surrey
Polglase, E. J., Clifton, Bristol
Polland, J., Holywood
Powell, F., Birkenshaw, Bradford
Powell, H. C., Buxton
Purchon, W. S., Tooting Common, S.W.
Pywell, R., Hanwell, W.
Rahbula, E. A. R., Clapton, N.E.
Rattenhuber, F., Shepherd's Bush
Rees, W. D., Cardiff
Rhodes, W. C., Chelsea, S.W.
Rigby, L., Manchester
Riley, R. H., Lower Darwen
Rollo, R. L., Glasgow
Ross, S. W., Belgravia, S.W.
St. Aubyn, F. J., Battersea
Scaife, E. J, Bolton
Selway, E. R. D., Stourbridge
Shanks, N. F., Old Trafford, Manchester
Sheath, A. G., Eastbourne
Shelbourn, E. P., Melton Mowbray
Smeed, C. A., Stratford
Smith, F. W., Newark-on-Trent, Notts
Smith, J. R. B., Furzecote, near Botley
Smith, L., Lockwood, Huddersfield
Spurling, E. A., St. Leonards-on-Sea
Stanley, G., Trowbridge, Wilts
Stead, M. J., Halifax
Stock, C. H., Carlisle
Stubbs, E W., Norwich
Tallboy, H. C., Ilford
Thompson, G. C., Gateshead
Thorn, A. K., Wandsworth Common, S.W.
Tilden, P. A., Northwood, R.S.O.
Toone, A. J. E., C.-on-M. Manchester
Trepess, H., Warwick
Turner, K. W., Ipswich
Vallance, G. A., Mansfield
Vincent, P. J. N., Plymouth
Walker, H., Hessle Common, Hull
Walker, W. D., Halifax
Warren, H. G., Exeter
Watkinson, H. E., Goodmayes, Essex
Watson, F. E., South Ealing, W.
Webb, R. W., Brislington, Bristol
Webster, F. P., Totley Rise, Sheffield
West, A. B., Abingdon, Berks
West, J. L., Abingdon, Berks
Whitby, C., Sandown, I.W.
Whitham, N. A., Barnsley, Yorks
Wilde, E. S., Weston-super-Mare
Wilkinson, W. H., Halifax
Winch, A, Roundhay, near Leeds
Winfield, J. E., Regent's Park, N.W.
Wood, P. M., Manchester
Woodhouse, B. W., Carlisle
Wornum, G. G., Hampstead, N.W.
Worth, L., Bournemouth
Wright, S., Macclesfield
Young, H., Portsmouth

Intermediate.

The Intermediate Examination, qualifying for registration as Student R.I.B.A., was held in London and the undermentioned provincial centres on June 6, 7, 8 and 9. One hundred and fifty-seven candidates were examined, with the following results:—

District.	Number Examined.	Passed.	Relegated.
London	93	44	49
Bristol	10	6	4
Glasgow	5	5	0
Leeds	18	13	5
Manchester	24	15	9
Newcastle	7	5	2
	157	88	69

The passed candidates, who have been registered as Students, are as follows, the names being given in order of merit as placed by the Board of Examiners:—

Davy, C. R., Maidenhead
Thomasson, W. J. M., Bournemouth
Harvey, W., Edgware-road, W.
Henderson, A. G., Shawlands, Glasgow
Jenkinson, J. M, Sharrow, Sheffield
Binning, A., Blackheath, S.E.
Moss, H., Whalley Range, Manchester
Morley, E., Bradford, Yorks
Lidbetter, H., Carlisle
Kenyon, A. W., Upperthorpe, Sheffield
Bray, A. G., Bolton
Wearing, S. J., Leicester
Constable, A. S., Stocksfield-on-Tyne
Corney, J. W., Leeds
Woods, F., Maidenhead
Adam, D. A., Heaton, Newcastle-on-Tyne
Donaldson, F., Bishop Auckland
Dawson, N. J., Foxhall, near Ipswich
Edmonds, L. W., Balham, S.W.
Meakin, F., Myddleton-square, E.C.
Spurr, W. R., Batley, Yorks
May, P., Dulwich, S.E.
Orme, R. W., Oldham
Dunnage, G. E., Worcester Park, Surrey
Carey, J., London
Brownrigg, A. H., East Dulwich-grove, S.E.
Hill, T. H., Hale, Cheshire
Hicks, H. L., Gosforth, Newcastle-on-Tyne
Wills, G. B., London
Ling, R. B., Lavender-hill, S.W.
Abel, A. J. T., Clapham, S.W.
Rusbridge, A., Reading
Young, R. C., Cotham, Bristol
Pritchard, W., jun., Lancaster
Hartnell, A. P., Redland, Bristol
Birkett, S., West Didsbury, Manchester
Simpson, C. H., Russell-square, W.C.
Whitehead, W., Leeds
Corfield, C. R., Falmouth
Rushworth, T. S, Clapham-road, S.W.
Nicholls, L. S., Handsworth, Birmingham
Salwey, J. P., Reading
Vaughan, J. H., Ilford
Healey, H., Didsbury, Manchester
Walgate, C. P., Beverley, Yorks
Clark, C. W., Howdiscombe, Plymouth
Harral, W. H., Leicester
Bower, A. E., Blundellsands, Liverpool
Webster, W. R., Aberdeen
Rowledge, G. H., Chorlton-on-Medlock, Manchester
Young, J. G., Ashburn, Alloa, N.B.
Collington, F. E., Nottingham
Warlow, H. G., Sheffield
Maltby, C. B., Southfields, Leicester
Reinmann, C. L., St. Leonard's-on-Sea
Wright, C. L., West Kensington, W.
Caminesky, P., Cheetham, Manchester
Goldsmith, G. H., Manchester
White, C. H., Montpelier Bristol
Fitzroy, A. H., Lincoln
Colles, G., Cheadle Hulme, Cheshire
Cotterell, A. N, Bristol
Crowe, J. J., Lidget Green, Bradford
Douglas, A. H., Maida Vale W.
Dunn, A., Gloucester
Ellison, W. H., North Barnsley, Yorks
Fullford, C. G., Salisbury
Groves, C., Chester-le-Street, co. Durham
Guthrie, W., Clapham, S.W.
Hall, A. W., Ealing
Helm, W. F., Scotstown, Glasgow
Hunter, R. C., Edinburgh
Idle, M., Clapham, S.W.
Keir, W. I., Melksham, Wilts
Leonard, F. G., Chatham
Margary, H. Y., Upper Tooting, S.W.

Petch, E. S., Stepney Rise, Scarborough
Pett, H. M., Brighton
Phipp, R. A. H., Trowbridge
Ponder, C. V., Hastings
Reed, C. A., Clapham Common, S.W.
Rose, W., Roath, Cardiff
Sayer, H. R., Peckham, S.E.
Sayner, J. H., Harrogate
Twizell, G. S., Newcastle-on-Tyne
Unwin, H., Bolton
Watson, F. J., Forest Gate, Essex
Webster, F. C., Broughty Ferry, Scotland.

Final.

The Final and Special Examinations, qualifying for candidature as Associate R.I.B.A., were held in London from June 23 to 30. Of the 74 candidates examined, 21 passed, and the remaining 53 were relegated to their studies. The successful candidates are as follows :—

*Barrett, L. N., Harrow
Carder, A. A., Clapham Common, S.W.
*Doll, O. S., Lancing
Elkington, G. L., London
Ely, G. F., Liscard
Fleming-Williams, C. L., Clapton, N.E.
Fouracre J. L., Plymouth
Grace, L. U., Bedford-row, W.C.
Le Maitre, W. C., Haymarket, S.W.
Markham, J. H., West Hampstead, N.W.
Moore, L. T., Great Yarmouth
Myer, V., Gray's Inn, W.C.
Naylor, J. J. S., Hanover-square, W.
Prince, H., Clifford's-inn, E.C.
Quirke, W. D., Hove
*Reid, E., Sunderland
*Robinson, P. Leeds
Searle, S., Harrow-on-the-Hill
Thomas, N., Rochester-road, N.W.
Walker, J. W., Portleben, Aberdeen, N.B.
Watson, W. E., Whitehall-place, S.W.

The following table shows the number of failures in each subject of the Final Examination :—

I.	Design	40
II.	Mouldings and ornaments	37
III.	Building materials	19
IV.	Principles of hygiene	16
V.	Specifications	22
VI.	Construction, *foundations, etc.* ..	19
VII.	Construction, *iron and steel, etc.*	27

The candidates to whose names an asterisk is prefixed entered for the Special Examination, which is for architects in practice not less than twenty-five years of age, and chief assistants over thirty. Such candidates are exempted, by special resolution of the Council, from the Preliminary and Intermediate Examinations, and from submitting "Testimonies of Study."

THE ROYAL INSTITUTE OF PUBLIC HEALTH.

THE Congress of the Royal Institute of Public Health this year took place in London from Wednesday in last week till Tuesday last. The opening sitting was held at His Majesty's Theatre on Wednesday afternoon, when the Marquis of Londonderry, President of the Board of Education, delivered an address, with special reference to the physical condition of school children. The sectional meetings were held at King's College and the Polytechnic, Regent-street.

Engineering and Building-Construction Section.

The first sitting of this section was held on Thursday morning at the Polytechnic, under the chairmanship of Sir Alexander R. Binnie. Mr. A. J. Martin and Mr. W. Aldwinckle (for Mr. W. H. Maxwell) acted as Hon. Secretaries of the section.

The President, in his opening address, said he would attempt to describe the circumstances which had gradually led up to the present very healthy state of the Metropolis as a whole. From the earliest times, in London, refuse was passed into the old river courses which flowed down to the Thames. Walbrook and the Fleet Ditch gave evidence of that. Up to about 1832, when there occurred the disastrous outbreak of cholera, London was practically a cesspool town. With the great cholera outbreak something had to be done, and gradually the system of connecting houses with the old water courses came into vogue. The result soon showed itself. The whole of the sewage of London was passed into the Thames along the old valley lines, and the river became frightfully offensive. He could remember, in the days of his youth, when the windows of the Committee-rooms of the House of Commons had to be kept permanently closed in consequence of the effluvia from the Thames. That condition of things existed until about 1855, when the Metropolitan Board of Works was established for the purpose of dealing with the sewage of the Metropolis, and, under his predecessor, Sir Joseph Bazalgette, a large system of intercepting sewers was introduced—three on each side of the Thames, and running parallel with the river. These sewers prevented the sewage entering the Thames in London: those on the north terminated at Barking and those on the south at Crossness. The low-level sewer, on the north side, required two pumpings—one at Grosvenor-road and one at Abbey Wood. The other two flowed by gravitation the whole way down to Barking. On the south side, the large area from Deptford to Battersea formed what was called the Old Marsh, and the natural level of it was 6 ft. below high-water mark, and so this necessitated pumping in the case of the chief sewer. This was done at Deptford, where the sewer was joined by the other two sewers, and the whole flow then passed on to Crossness. These works, so ably carried out by Sir Joseph Bazalgette, had been the means of rendering London one of the best-drained cities in the United Kingdom. At that time the sewage was allowed to accumulate in reservoirs at Crossness and Barking, and it was discharged on the fall of the tide. This greatly improved the upper portion of the river; but from 1886 to 1890 this state of affairs began to show its weakness. The crude, untreated sewage passed into the river deposited its solid matter, and that rapidly underwent a process of decomposition, and showed itself very obnoxiously by floating on the surface. The result was that the sewage was treated in precipitation tanks with lime and proto-sulphate of iron, and from the precipitation tanks it passed by what might be termed the intermittent system. These were the works which he, in 1890, had to take charge of, and it struck him at once that the intermittent system was somewhat defective. They did not get the amount of solid matter which they expected, and at last they decided to adopt the continuous system which, within a month, gave them double the quantity of sludge. The sludge was taken about twenty miles below the Nore, where about 2,000,000 tons of sludge was deposited per annum, of which 200,000 was absolutely dry solid matter. That was the system that was now being worked, except that there was a continuous flow of the effluent into the river. The margin, however, allowed by Sir J. Bazalgette had long been exceeded, and, in 1891, Sir B. Baker and he (the speaker) reported upon the whole system, and they advised the London County Council to introduce larger and other intercepting sewers to meet growing demands. These works were commenced by himself five years ago, and were now being carried out by Mr. Fitzmaurice. Before ten years the London County Council will have spent between £2,000,000 and £3,000,000, and they might expect that London would go on as it had up to the present—a well-drained, healthy town. In sewage matters, due attention must be paid to the stream or river into which the effluent was poured, for, in the case of London, for instance, if they were to exact a very high degree of chemical purification, they would place a burden on the community which would be enormous. In London the sewage passed into a tidal river of great volume, and, so long as that river was able to destroy the matter poured into it, he thought for many years it would be sufficient for the requirements of the case. When they passed to other towns in the interior of the country not so fortunately placed, a careful system of purification became of the utmost importance, because from the streams and the wells came the water supply.

On the motion of Mr. Baldwin Latham (London), seconded by Mr. G. Whyatt (Grimsby), a hearty vote of thanks was accorded Sir Alex. Binnie for his address.

Glasgow Main Drainage.

Mr. A. B. McDonald (City Engineer, Glasgow), in the course of a paper on this subject, said that he believed that great improvement had been effected in the Clyde, for he had had unsolicited testimony from the masters of river steamers that the results following on the completion of the sewage works on the north bank of the Clyde had been successful beyond all ordinary anticipation. Unfortunately, the district was undergoing the most protracted drought that had occurred for thirty-seven years, with the consequence that the harbour water of Glasgow was, at the present time, in a relatively foul condition. The drainage undertaking of Glasgow, next to London, was the largest in the world; the drainage area measured about forty square miles. Two purification stations had already been completed, and in about three years the Shieldhall Works on the south bank was expected to be able to deal with the remaining pollution derivable from Glasgow territory. The ultimate delivery of sewage that had to pass through the three works would be ninety-seven million gallons per day, conveyed by something like thirty miles of sewers, ranging in diameter from 2 ft. 6 in. to 10 ft. In conclusion, the author quoted a number of figures with regard to the percentage of purification achieved at the different stations, which, he said, appeared to him to exceed anything that any public health authority could possibly exact from an industrial community such as Glasgow.

Relative Areas of Sewage and Storm-Water Filters.

Mr. Sidney R. Lowcock, M.Inst.C.E., in dealing with the subject of "The Relative Areas of Sewage and Storm-Water Filters," first touched on the Local Government Board requirements for the filter area, and pointed out that one of the practical difficulties in having separate filters for storm water was that frequently for long periods there was no storm water to be dealt with, and the filters, if left idle, became sterile. Consequently, in order to keep them in bacterial cultivation, they must be regularly treated with sewage proper, and then they had the anomaly of two different filters dealing with the same sewage, one at least 4 ft. deep, the effluent from which must be applied to land, and the other only 3 ft. deep, the effluent from it going direct to the outfall. To get over the difficulty and bring the whole thing into line, the author suggested that the Local Government Board regulation as to the storm-water filters should be altered, or rather expressed in another way—that is, in the same way as the regulation applying to the sewage filters, in gallons per square yard per foot in depth, and the storm-water filter should be allowed to be made of the same depth as the sewage filters. The regulations would then read that for sewage filters the mean rate of flow should not exceed 56 gals. per square yard per foot in depth per twenty-four hours, with a minimum depth of 4 ft., and for the storm-water filters, the mean rate of flow should not exceed 168 gals. per square yard per foot in depth per twenty-four hours. For a depth of 3 ft. of storm-water filter this rate is the same as that at present allowed. This, in his opinion, would simplify the working of the filters and tend to increased efficiency.

Chemical Treatment of Sewage.

Mr. Douglas Archibald described the process carried on at the Kingston-on-Thames Sewage Works, with the results obtained. The works were built by the Corporation, and opened in 1888, in order to carry out the system of sewage purification operated by the Nature Guano Company. They were designed by Major Macaulay, the Borough Surveyor, and have been working for seventeen years, and now serve a population of 55,107. The average daily flow of sewage was about 2,597,574 gals. The substances employed for purification are sulphate of alumina, clay, carbon, and a small quantity of blood. From various analyses, both of albuminoid ammonia and oxygen absorption of the tank effluent, the purification effected in the tanks is found to vary from 75 to 80 per cent. upon a crude sewage of normal strength, which often contains considerable quantities of gas and brewery refuse, and therefore sulphocyanides. Since 1895 the Thames Conservancy have revised their requirements to a point unattainable at all times by any tank process, and the Corporation, in consequence, are laying down 1¼ acres of contact beds, which will effect a further purification of from 60 to 70 per cent. The total purification of the raw sewage thus attainable with one contact therefore ranges from 90 to 94 per cent., and even then the complete work will only have cost 13s. per head on the present population. The guano, after emerging from the drying cylinder, is stacked and sold. The author gave tables showing the cost, which showed that, in comparison with eleven other

districts of somewhat similar character, Kingston was the cheapest.

Present Position of the Sewage Problem.

Mr. W. D. Scott Moncrieff then read a paper, entitled "The Present Position of the Sewage Problem." After some preliminary remarks, he said that whatever the required standard of purity might be, it might be taken generally that the sewage problem in its modern sense began and ended with this question of river pollution, and the safeguard of land as a necessary part of all sewage treatment only represented the fears of the Local Government Board that other methods provide inadequate guarantees of efficiency. The recognition of such a simple standard as the destruction or preservation of fish made it easy for the Legislature to enact pains and penalties, but it soon became evident that science had failed to provide the means, even in the case of the most lawfully-inclined communities, to comply with the statutory requirements. This discrepancy between the law and the reasonable means provided by science of conforming to it had all along been one of the chief features of the problem, and this opened the question as to whether the subject had ever been approached from a scientific standpoint at all. The successful application of natural laws to the solution of any physical problem depended upon the laws being complied with, and before this could be done there must be an accurate knowledge, in terms of some standard or measurement, of the phonomena involved. The extraordinary thing was that in other problems where the State never pressed for a solution of any kind, science had run concurrently with the needs of the community. He referred to the obvious cases of the perfecting machinery for manufactures and locomotion, to the development of chemistry in its industrial forms, and to electricity for lighting and traction. In contrast to all this, the question of sewage disposal had been approached from the untenable position that all sewage was alike, and even then without any measurable or measured data, until it seemed as if no one cared whether the problem was dealt with scientifically or not. What would be the position of any other science if it was impossible to mention a single proposition with regard to it which was universally accepted? Yet this was absolutely true of the sewage problem. All that one could say was that there were a few generalisations which were admitted, at any rate, by a majority of the *soi-disant* experts, and it might be well to consider what these are.

"The first proposition I shall refer to is one that is not yet universally accepted, but is slowly gaining ground, namely, that in the biolysis of sewage, which is the breaking-down of organic matter into mineral forms by the life-processes of micro-organisms. Nature's methods should be followed implicitly, and that the process should first make use of those organisms which hydrolise the organic matter in suspension with a rise of temperature and the evolution of hydrocarbon gases, and that the work should then be carried on in a second and separate stage by a different kind of organisms, which break down the organic nitrogen to nitrates, with the evolution of carbonic acid gas and a fall of temperature—a phenomenon which I have only recently discovered, and which, so far as I know, has not hitherto been suspected.

In the first stage there is the work of organisms that under different conditions can produce a temperature of combustion with the evolution of combustible gases; and in the second stage the work of those that absorb heat and produce gases that put out a candle. And yet there are experts who maintain that in these processes Nature's methods need not be followed, and that the two stages may be jumbled together, so long as a partial purification can be obtained sufficient to meet some particular case. On the one hand, we have such a community as Glasgow ignoring the first stage altogether, and spending great sums of money upon chemicals; on the other, Birmingham, where 5,000*l.* per annum was saved on lime alone by simply invoking the natural forces that lay to their hands. In the next place, it is generally agreed that the difficulties of dealing with the organic matters in solution are not connected with the organic carbon, but with the organic nitrogen; and, that being so, the reasonable course would have been to follow up any clues that were likely to solve the difficulty of dealing with the organic nitrogen upon bacterial lines. Seeing that if the organic nitrogen is fully mineralised all the other chemical difficulties disappear, it was obviously worth while to concentrate every effort upon the discovery, in terms of some sort of measurement, of the actual conditions that yielded the highest mineralisation of the nitrogen. It made no great demand even on the intelligence of a layman to come to the conclusion that the apparatus which gives the highest ratio of oxidised to unoxidised nitrogen in any particular sewage, if the conditions can be accurately measured, must be a guide to the final solution of the problem, which then, in the very nature of the case, could only consist of reproducing the same results upon a large scale. . . .

A third and most important proposition has, unfortunately, been retarded in its acceptance because immense sums of money have already been expended upon schemes that are in direct contradiction to it. I refer to the fact that, while a certain amount of purification can be obtained from mixed groups of organisms working under unfavourable conditions, high nitrification, which is the true test of efficiency, can only be obtained by allowing the organisms to work in naturally selected groups, each suited to live upon the nutriment provided by the different chemical transformations which occur during the mineralising process.

It was the application of this zonal action which made it possible to obtain a ratio of 98·6 per cent. of oxidised to unoxidised nitrogen and nine parts per 100,000 of nitric nitrogen from an ordinary domestic sewage. And yet, although all the factors that gave these results are fully in evidence, and can be measured with great accuracy, their existence as an obvious key to the solution of the problem has been persistently ignored.

All the factors that require to be known with regard to the mineralisation of a well-hydrolised effluent are:—

(*a*) The quantity of oxygen required for the life-processes of the oxidising organisms.

(*b*) The best quantity of liquid to be delivered at each discharge.

(*c*) The best interval of rest between the discharges.

(*d*) The depth of filter at which the necessary degree of purification is obtained.

A knowledge of these four factors, in terms of quantity and time, is required in every case in order to design the necessary works for any given sewage, and until this is recognised as being absolutely essential the sewage problem will remain in a muddle."

Discharge of Crude Sewage into the Sea.

Mr. G. B. Latham, in a contribution on this subject referred to past objections against sea outfalls on the ground of waste, but said the practice had shown that the production of a good effluent, with no nuisance to the neighbourhood, was all that could be aimed at in sewage disposal. The advantages of a sea outfall over any other form of sewage disposal are that, as well as being financially the cheapest, the only attention the works require is by unskilled labour in the opening and closing of a valve at the proper times, and attention to the screen, if there is one. The volume dealt with, as far as the disposal alone is concerned, is immaterial, and so, as a rule, there is no need to exclude the surface water from the sewers. Further, trade refuse can be taken into the sewers, as it is satisfactorily disposed of without any special attention or addition to the works. In designing sewerage works with a sea outfall, it is necessary to ascertain the tidal curve in the locality, as it is the difference between the level of the sewage in the sewer and the level of water above the outfall, minus allowance for the difference between the specific gravity of sewage and sea water, that will give the available head on which to calculate the size of the outfall sewer required to discharge the sewage during the determined time of discharge and the flood water at all stages of the tide. Further, should a scheme wholly or in part gravitation be adopted, the highest low-water neap tides determine the lowest level at which the outfall sewer can be laid, as the sewers must empty every tide, and the highest high-water spring tides determine the lowest level that can be drained in time of storm without pumping. The most favourable position for an outfall is at the end of a headland, which, projecting ing, throws both flood and ebb tidal currents out to sea. Where these conditions cannot be obtained the main consideration is that the outfall should be on the down-stream side of the town on the ebb tide. Failing this, there should be a large volume of water, either tidal or fresh, discharging into the sea at the point of outfall, which will tend to carry the sewage more or less to sea. He was of opinion that no town on or near the sea is so situated that a proper sea outfall for crude sewage cannot be designed, and that the combination of several authorities to take their sewage by a trunk sewer several miles into the sea—as in the case of the Western Valleys (Mon.) Sewerage Board, formed by the Urban District Councils of Abercarn, Abertillery, Ebbw Vale, Nantyglo and Blaina, and Risca, who, by a joint scheme, are taking their sewage into the Bristol Channel, and discharging it there during the first four hours of the ebb tide—would, in many other places, be found the best and proper method of sewage disposal, and that sanitary authorities should combine more often for this purpose.

Recent Sewage Work in America.

Dr. Kinnicute, in an interesting paper on "Sewage Work in America," confined himself to the one method of the purification of sewage by intermittent filtration through prepared sand beds, which method was the outcome of experimental work done in America by the Massachusetts States Board of Health, and was, he believed, the method, which, when natural conditions allowed it to be used, gave the greatest percentage of purification and at the least cost. The method consists in applying sewage intermittently to filter beds made of comparatively coarse sand, whose efficient size is between 0·23 and 0·30 millimetres. The first work of the Board of Health was the building of an intermittent filtration plant for the town of Framingham, which had a dry-weather flow of 650,000 gallons of sewage per day. The plant had been in operation since 1890, and the results have been excellent, the effluent averaging:—Free ammonia ·217, albuminoid ammonia ·0104, oxygen consumed ·26, and nitrogen as nitrates ·9854. This success led to other towns following, and, at the present time, there are in Massachusetts three cities and eleven important towns, besides several other towns and numerous public institutions treating their sewage by this method. The method of construction of intermittent sand-filtration beds is, in most cases, very simple. In Massachusetts comparatively large areas of fairly level sandy soil are of very common occurrence, and all that is necessary to do is to strip off the surface soil, level off the sand area, divide it into beds by embankments made of the strippings, remove from the sand beds so made any pockets of clay or quicksand, underdrain the beds, which was best done by digging trenches 4 ft. to 6 ft. deep, about 50 yds. apart, and replacing in these trenches Akron clay pipes, laid with open joints. These drains are connected with the main drains, placed in the embankments between the beds, and the sewage is brought to the plant by gravity or by pumping, and by various methods distributed upon the surface of the beds. In certain cases, however, the sand beds had to be made by excavating the soil to the depth of 4 ft. to 5 ft., and replacing the soil by sand taken from some neighbouring knoll. The cost of construction where excavation is not required is from 200*l.* to 300*l.* per acre, and where excavation is required it is from 800*l.* to 1,000*l.* per acre. The beds vary in size from ·05 of an acre, superficial area, up to one acre. In some places the beds are perfectly level, and in other places ridged, the difference being due to the difference of opinion as to the best method of applying the sewage. The original method was to allow the sewage to run upon a bed at the rate of 50,000 to 70,000 gallons per acre in six hours, but at present one often finds a dosing tank from which, by means of automatic devices, the allotted amount of sewage can be run upon the bed in from fifteen to twenty minutes. The preliminary treatment of the sewage, as a rule, consists of either screening or screening and sedimentation, only one town

in Massachusetts using a septic tank. The author believed, however, that when properly used septic tanks would allow of a much larger amount of sewage being treated per acre per day, and would also reduce to a large extent the amount of scrapings from the beds. The working of these plants in summer is very simple, but in the long and cold winters, when the beds are covered with ice and snow from December to March so that the surface of the bed cannot be reached, the filters have to be operated with considerable care to obtain good results. Trouble was also caused in the winter owing to the clogging of the beds, and the amount of sewage which can be applied is considerably reduced, and unless there is a reserve area for winter use there is danger of a certain amount of sewage being allowed to escape untreated. With regard to capacity, the author believed that if crude sewage was run directly on to the beds one acre of filter surface should be provided for every 500 persons, but if the sewage has undergone preliminary treatment by sedimentation or septic tank treatment, the same area may receive the sewage of from 1,000 to 1,500 persons. The cost of maintenance varies, but where the sewage runs by gravity to the filter beds the total cost should not exceed 16s. per 1,000,000 gallons. If the sand which is removed by scraping is replaced, he saw no reason why a carefully constructed plant should deteriorate.

Mr. Baldwin Lathom proposed, and Mr. Whittaker seconded, a vote of thanks to the readers of the papers, and this was carried.

Bailie Anderson, of Glasgow, in opening the discussion, said that, notwithstanding the deprecatory remarks which had fallen as to the value of the system of chemical precipitation, yet in Glasgow the method was satisfying their requirements. The question of purification was one which every locality must deal with for itself, and if Glasgow found this method met its requirements, then he could not be expected to agree with Dr. Kinnicute that it was a failure. It was all very well for scientists and engineers and chemists and advocates of the bacteriological system to say that this or that system was the best; but the representatives of the ratepayers had to consider what was best and cheapest. In Glasgow they delayed their works to learn something more of what London was being advised to do, but they found that this advice, if followed, would have cost them ten times more than the cost of chemical precipitation, and, as representing the ratepayers, they did not feel justified in going to such an expense. They were satisfied with their system, and were satisfied that they removed not only the suspended matter, but a great deal of matter in solution, and were producing a very good effluent indeed.

Mr. Baldwin Latham pointed out that it was very difficult to compare an effluent in a tidal river and in a fresh-water stream. There was one thing in a tidal river which was of enormous force in removing sewage, and that was the mixing action. That was much more potent than the tidal flow or the current of water. The mixing action depended on the capacity of the river at low water, and so they must have regard to the place where the sewage was disposed of. Contact beds had been in operation for twenty years, and it was twenty years ago that the Friern Barnet Works were laid down, and had been dealing with sewage ever since, and had produced the best effluent that ever had been produced in the country. They knew that the London County Council had been making experiments, and they all hoped the day would come when salmon would come up the Thames, but that would not be until they had something more perfect than a mere chemical process.

Mr. G. Whyatt (Grimsby) remarked that at his town they discharged the sewage untreated into the river, and there was absolutely no harm done, because the volume of water was so immense. So far as they were concerned, therefore, the problem did not exist. They had listened to contradictory opinions that day, for while Mr. Archibald told them that the chemical process was satisfactory and that the effluent would not undergo secondary decomposition, Dr. Kinnicute told them exactly the opposite. Mr. Scott Moncrieff told them that the problem had never been tackled scientifically, and it appeared to him that those who had to face the problem would hardly know where they were.

Mr. Lambie (Lanarkshire) thought that the price at which land had to be bought was at the root of the whole matter. He did not see why sewage disposal should not be treated in counties instead of having a large number of small installations.

Mr. Alderman Gibbons (Wolverhampton) said he was surprised to hear what was said about Birmingham sewage. If they rode along the line from Birmingham to Derby they would never see anything more deplorable. There were thousands of acres waterlogged between Saltley and Tanworth.

Mr. Dibden said that over seventeen years ago he described the process of chemical treatment proposing to deal partially with London sewage, and he was pleased to know that the Council had been successful in accomplishing that which it was intended to accomplish. That process was copied by Glasgow, and he was glad to hear that they were extremely pleased with the results. The treatment removed the grosser condition of the river, but the effluent would have to be further treated before they got fish to live in it. He looked forward to the time when, by the bacteriological treatment, fish would be enabled to live, and he trusted Glasgow would follow in time.

Dr. Kinnicute said he did not wish to condemn the chemical treatment. All he said was that he did not consider it a complete method of purification.

The section then adjourned.

SECOND DAY'S SITTING.

On Friday Section B and Section D combined together to hear papers on School Building. Mr. J. H. Yoxall presided.

Elementary Schools in Rural and Urban Districts.

Mr. A. A. Kemp (Whitstable), in the course of a paper on "The Planning and Extension of Elementary Schools in Rural and Urban Districts," referred more particularly to the effect of the Education Act of 1902 upon rural districts. He thought that many of the difficulties which are experienced in carrying out any proposed scheme by the education authorities could be obviated by the appointment of an inspector of building acting directly under the Board of Education. Coming to the general construction and planning of new buildings, the author said the most suitable sites are those which have either gravel, chalk, or sandy soil. Care should be taken that the altitude of the land should be well above the storm level of any stream in the neighbourhood, and, if possible, where a district is not sewered, it should be in a position so that one could carry an effluent pipe for treating the drainage to an open watercourse. The area of the site should be sufficient in all cases for the erection of a complete group of schools, even although at first only a small school was required. The best arrangement of the buildings, particularly for infant schools, is where the classrooms are grouped round a central hall, with cloakrooms on each end with flat roofs, the central hall being lighted above the cloak-room roof with large gable lights. This is much better than a lantern light in the roof, both as regards light and ventilation. In large schools heated by hot water, the low-pressure system is the best that can be adopted for even temperature, cleanliness, and economy. The first cost is not much more than that of ventilating stoves, and the excess is soon saved by the reduction in the expenditure on fuel. He did not consider ventilation by windows only an efficient system. Vitiated air-plates should be fixed in the ceiling and connected with a tube to some efficient ridge ventilator in the roof, or another simple form of an extract ventilator can be formed by building in glass louvres in each gable. His view was that a building can be thoroughly ventilated without going in for any costly special appliances. The code set out by the Board of Education as to the construction of walls provides that they should be solid, and not less than 14 in. in thickness; where hollow walls are used, one portion must have the full thickness required for solid walls. This he considered wasteful, particularly when the building is only one story in height. In many instances the wall does not exceed 14 ft. in height, and would be quite safe if erected with two casings, 9 in. inside and 4½ in. outside, tied together with galvanised iron ties. This particularly refers to buildings in exposed positions, as in every case where 14-in. solid walls are used there are portions of the wall which are always damp, thus causing an unhealthy building. The cost of the work would prohibit the walls being built with 14-in. inner casing and 4½-in outer casing, as the code sets out. The inside of the walls should be faced dado high with glazed bricks, or some other suitable material which can be easily washed down and kept clean and sanitary. The walls above dado level should be faced with Portland cement faced with Keen's, and afterwards painted with indestructible paint, which likewise could be washed down and kept sanitary. All internal and external angles to walls, floors, and ceilings should be formed with hollows and rounded at corners, thus preventing dust accumulating in the interior angles, also giving better facilities for sweeping the dust away from the intersections of floor and walls. Care should be taken that projecting ornamental mouldings, cornices, and architraves should not be introduced more than is necessary in the interior of school buildings, as they only harbour dust and bacteria, which should be avoided as much as possible. Where a system for the treatment of the drainage can be arranged it is of the utmost importance that it should be, as cesspools and other modes of drainage used in rural districts are very injurious to health, and should be avoided if possible.

Ventilation of Schools and Public Buildings.

Mr. J. H. Blizard then read a paper on "The Ventilation of Elementary Schools and Public Buildings." In the course of his remarks he said:—"Under the Building Rules issued by the Board of Education, the minimum requirements were, for infants, 8 sq. ft. of floor area, or 80 cubic ft. of air space, and for adult children, 10 sq. ft. of floor area, or 130 cubic ft. of air space. A few years ago the rule for infants was altered to 9 sq. ft. of area, which was certainly an advance in the right direction, small though it was. In all the codes ventilation has been mentioned, but never really considered; that is to say, 'actual interchange by the removal of the vitiated air and replacing it with fresh air.' It was only a few years ago that an area of outlet per child was mentioned—viz., ½-in. outlet area per child, and ¾-in. inlet area; that has gradually grown, until to-day it is 2 in. area per child for the outlet, and 2½-in. area per child for the inlet. This is better than nothing, but it is really very little good. The actual results should be obtained and published, and a further alteration would very soon be made. These figures show very slow progress of the Education Department on this all-important subject. The limit of cost per head for the buildings and site, after the passing of the Education Act of 1870, was 10*l.*; it is now 10*l.*, but excluding site, central halls, and a few other matters, such as glazed brick facings, etc. . . . I respectfully submit, with all deference to the medical profession, that the construction of schools, elementary or otherwise, should go hand-in-hand with the construction of sanatoria or isolation hospitals. . . . I submit that the cubic capacity laid down by the Board of Education for each child—viz., 80 ft. and 130 ft. respectively—is grossly insufficient, even if there be fairly good ventilation: but it is impossible to get good ventilation with so small a cubic capacity per child, and the most serious part of it is the absence of any attempt at ventilation—that is, actual interchange of air—in the large majority of schools throughout the country. I venture to say the majority are insufficiently ventilated, and in many cases not ventilated at all. This is a serious indictment, but it is nevertheless true. . . . I submit that schools, where children are compelled to go, should be treated in a sense as a hospital, and that it is no good having a school unless it is properly designed for school-work from a hygienic standpoint. Doubtless, you will say that under the present law the cost governs everything; so it does, and so long as the limit is adhered to as laid down by the Board of Education, so long we shall have unhygienic

schools. The average ratepayers' representative must have nothing to do with the cost of a school; it must be dealt with directly by the State, or the ratepayers must be assisted by the State. It is unreasonable to expect a poor district with a low rateable value to do the same as a rich district with a high rateable value—East Ham and Westminster, to wit. . . . Ten years ago I designed a central hall, 83 ft. long, 40 ft. wide, and 30 ft. high. There are hot-water coils there; the cloak-rooms are warmed for drying the children's clothes, but there is no hot water to the lavatory basins. I would go still further to-day if I were allowed to do so, and have a regulated hot-water supply to the lavatory basins, and a bath for the children, so that they could be properly washed if sent dirty to school, also a disinfecting apparatus to disinfect the clothes of some of the poor children who are so sadly neglected by their parents, and allowed to go to school in a verminous condition, to the danger and discomfort of the large majority of children sent with proper clothing, and with due regard to cleanliness. The teachers, be it said to their credit, extend deep and practical sympathy with neglected children, and if an apparatus were provided and worked by the caretaker under the direction of the head teachers, it would have a marvellous educational effect upon the minds of the children so treated, and would bear good fruit in the future. The cloak-rooms should also be arranged to give more hanging space for the clothes, in order to have better aeration during the time the children are in school, than can be obtained under present conditions. I have inspected and reported upon about fifty voluntary elementary schools since the passing of the Education Act, 1902, and the results were astounding. . . . Not one school had a proper combined scheme of heating and ventilation, and the sanitary arrangements were in some cases appalling. This could not exist if proper sanitary experts inspected the schools. In my position as architect and surveyor to the School Board of Southampton, after my appointment thirteen years ago, the first thing I tried to bring about was the ventilation of the then schools. I reported upon them to my Board, and in two or three cases only were my reports adopted. Why? Simply because the members did not understand the question, and thought my ideas too fanciful. The argument was always, 'Ventilation by open windows is sufficient,' and that is the usual argument with the average School Board or education authority. Many schools should be condemned to-day for that reason. Even with the new schools it is the same old story: Keep down the cost, ventilate by open windows, and have ordinary fireplaces for warming. Just imagine the open doors and windows in the winter, which I have so often seen, and doubtless you have, too, and the air outside at freezing-point. Bad as it is for the children, it is better than the slow poison of pre-breathed air, which is also more or less saturated with emanations from uncleanly bodies; in fact, I have been told by both masters and mistresses that they cannot carry on their work without resorting to the open windows. Most of this has been done under plans passed by the Education Department with the limited cost per head.

Now, what is the remedy? We must admit that 130 cubic ft. per head is insufficient for reasonable ventilation. Soldiers in their barracks are allowed 600 cubic ft.; a man in a common lodging-house 300 cubic ft.; in a workhouse dormitory 300 cubic ft.; and for a scholar in a Canadian school 240 cubic ft. In our elementary schools we should have 250 cubic ft. per head, whether it is for infant or adult scholars, and that the actual interchange be at least four times per hour, winter and summer. There should be no imagination about it. Let it be done and passed by experts appointed by the Board of Education, and a certificate granted to that effect. Such a scheme would give 1,000 cubic ft. to each child every hour, and would minimise the evils and liabilities of infection; it would enable the children and teachers to breathe reasonably pure air, reduce the sickness rate, make everyone lively and cheerful over the schoolwork, send up the average attendance, give better educational results, and, consequently, increase the school grants. All schools should be under the Board of Education or some other responsible authority appointed by the Government. They should be examined and put into proper hygienic order, which should include drainage, ventilation, and flushing of drains, sewage disposal, water supply, combined heating and ventilation based on a fair cubic capacity per head, with a continuous interchange of air of at least four times per hour, with the temperature maintained at 55 deg. F. when at freezing-point outside. This should be as carefully tested and adhered to as a battleship is tested for speed. Care should also be taken that the supply of fresh air be brought from as a high a level as possible, and not from a point near the ground, as with the average 'Tobin tube' or 'wall inlet,' and each school should be studied on its own merits or demerits. When the certificate is granted, the whole sanitary surroundings of the school should then be handed over to the Medical Officer of Health of the Sanitary Authority of the various districts in which the schools exist, who should make periodical visits to see that the sanitary and ventilating and heating arrangements are in working order, and so report in his usual annual medical report. The amount of ventilation, as suggested by me, is, in the minds of some heating engineers, very extravagant, having regard to the competitions into which they have to enter for schemes and estimates; but they would nevertheless welcome such a change, because the majority know that the so-called ventilation, as generally carried out, is only a farce. If they had a basis upon which to work—that is, cubic capacity, nature of the building materials, windows, amount of interchange, temperature to be maintained in winter, interchange mechanically in the summer by electric fans, gas-jets, sprays, or other means—they would be as glad to compete on such lines as a marine engineer is when competing for engines to maintain a given speed to a torpedo-boat. At the present time, unfortunately, it is usually the cheapest scheme which is adopted, efficiency not being considered. . . . The enormous amount of money required for the reconstruction of unsuitable schools must be found, but the question which again occurs to one's mind is 'State aid.' It must come; the children must be taught, and one of the principal subjects is hygiene; that being so, the places in which they are taught must be arranged and constructed on hygienic lines. If this is not put into practice, then the teaching will be thrown away, and very little good will result. . . . I hope the outcome of this paper, and the discussion upon it, will be that the Council of the Royal Institute of Public Health will memorialise the Board of Education to amend their building rules on hygienic lines, and so protect the health of the elementary school children, also to appoint inspectors who are known to have a good knowledge and experience of school hygiene. If this be followed up, and become an accomplished fact, then the future generations will be for ever grateful that such an institute existed.

I do not think I can go into the details for the ventilation of public buildings. The same principle which I have stated for elementary schools underlies every building where people congregate. The hygiene of public buildings should be determined by the Local Government Board, on somewhat the same lines that I have suggested for elementary schools, and whatever is settled by them should be adopted by sanitary authorities in the form of by-laws, and the medical officers of health should see them carried out and report annually, as suggested for schools. Churches, particularly, are, in my opinon, the best places for the dissemination of the germs of infectious disease, particularly consumption. What do you find in the average church? No ventilation at all, consequently an ideal place for infection. . . . Take also the average public hall, courts of law—yes, even our London Law Courts — military barracks, and general assembly-rooms; they are all alike — insufficiently ventilated. The only places ventilated, as I understand it—that is, air properly interchanged—are modern theatres. If public authorities would study the hygiene of the up-to-date theatre, and apply it to every public hall and church in their district, they would confer a great boon on poor suffering humanity, and would also keep the cost down for the maintenance of infectious diseases hospitals and sanatoria for the consumptive."

Planning of Educational Buildings.

Mr. E. R. Robson, formerly adviser to to Board of Education, and Mr. P. A. Robson contributed a joint paper on "The Planning of Educational Buildings," in which they said that, remembering that the whole first conception of strategy of plan turns on the scheme of education proposed for any particular school, architects have naturally looked for light and leading from those in the position of educational authorities. Such help, as yet, they have never received. The hygiene of a school really commences with the site; therefore its surroundings should not provide foul smells or nuisances, should be free from stagnant water or undrained land, and should be free from obstruction to sunshine or to the free passage of air all round. Being large and airy, the site should by preference be fairly elevated, sheltered from north-east winds, open to the south, and sloping away from the school. The subsoil should be of a dry, porous character, and, in towns, provided with at least one frontage to a wide street. The best shape is square, and the water supply must be sure. Play-grounds should face south, should be thoroughly underdrained with agricultural pipes, and the surface laid with tar pavement or asphalte. The number of entrances will vary according to the size of the school. The flooring of the corridors should be of tiles or granolithic pavement. For cloak-rooms and lavatories glazed brick is best for the wall surface, and there should be an impervious but dry flooring. Asphalt should not be used, as the condensation of the moisture in the air on its surface is highly disagreeable and unhealthy. The staircases should be fire-resisting, in short flights—no flight to exceed twelve steps—and of an easy gradient. A central hall should have an area of from 1,200 ft. upwards, but too large a one is both extravagant and useless. All class-rooms should be entered from the central hall, through glazed doors opening into the class-rooms. From the experience of other countries, 14 ft. per child is as much as is necessary in either secondary or elementary schools, but the question of a cubic unit is a more far-reaching matter. It is established that, for reasons of health, no scientific reason exists for making class-rooms of a greater height than 10 ft. In American schools an average of 164 cubic ft. is usual, so that, with 14 sq. ft. per child, and a room 12 ft. high, the cubic context per child is 168 cubic ft., or 4 ft. more than in America. The numbers to be contained in each class-room may vary from eighteen to thirty-six in secondary schools, and from eighteen to fifty in elementary schools; and elasticity of working is attained best by classes of forty and fifty in the latter, and eighteen to thirty in the former. Unscientific lighting and the improper shape of desks are largely to blame for the increase of weak sight in schools, and the authors laid down the following rules as being satisfactory if taken together:—(1) A room facing south (or thereabouts) should have not less than one-sixth of its floor area as clear window glass, and those facing north (or thereabouts) one-fourth actual glass area, not window space. (2) No room is properly lit without subsidiary light if the distance from the window-wall to the wall opposite is more than 25 ft. (3) All light should come to the left side of the scholars. (4) No windows should face the scholars or the teacher except for ventilation, or for subsidiary light behind the scholars in the corner of the wall away from the main light. (5) The rooms should not be less than 10 ft. high; 12 ft. is ample. (6) The height between the top of the glass and the ceiling should be never more than 2 ft., preferably less. (7) The height from the floor to the bottom of the glass, 4 ft. (8) The ceiling should be white, the walls very pale green (non-poisonous and washable), the ordinary woodwork white (enamel). (9) Heavy piers should be avoided, if possible, between the windows, also thick mullions and transoms and very small panes. The best form of artificial lighting is by acetylene gas, generated by an apparatus in which the calcium carbide drops into

water, and then the gas should drop through a purifier. The greatest factors in ventilation under ordinary circumstances are properly designed windows. If following the rules hereinbefore expressly laid down, these further additional hints will be useful:—A sash-window is the best form to use with a fan-light at the top. This gives ventilation at four points in a height of from 6 ft. to 8 ft., according to the height of the room. A vertical cill-board is useful to prevent draughts at the bottom, and, if the fan-light's fall is glazed, side-pieces or cheeks are desirable to obviate down-draught. The amount of window-space to be opened must vary in the different rooms, owing to the vacillation of our climate. But each child should receive 2,000 cubic ft. of new air per hour. In addition to this, further inlet ventilation is necessary by means of long Tobin tubes, the air entering at the floor level and discharging into the room up screwed shafts 6 ft. long through "shuttable" lids. The outlet should be by means of ordinary fireplaces, by separate flues properly proportioned to the size of the room and of the inlets, and aided by electric fans, or by ceiling trunks aided in the same way, or by a coil of pipes; ventilating radiators are liable to send draughts along the floor, and, moreover, if hot water is used in the radiators there is danger in frosty weather.

In the discussion which followed, Dr. G. Lyon held that the system of window ventilation had proved an absolute failure, and Dr. Somerville deprecated the appointment of an inspector of building under the Board of Education, as they would run a danger of having too much official supervision.

Sir George Kekewich said that a condition precedent to any good coming from the teaching of hygiene was an improvement in the houses of the working classes. He advocated the appointment of a medical officer at the Board of Education, and medical officers should also be appointed by the local authorities to visit every school and report on the sanitary condition of the schools and the health of the children, and they should get rid of the bad schools and put up others.

The Housing Question.

Mr. T. W. Aldwinckle subsequently presided over the resumed sitting of Section D, when papers dealing with the housing question were read.

Mr. J. Munce (Assistant City Surveyor, Belfast), in a paper on "Workmen's Dwellings in Belfast," said the demand for workmen's dwellings in the city had always been met by private enterprise. To have a cheap rent it was necessary to have a cheap site and a cheap building, and the method adopted at Belfast was to utilise the main frontages and the corner plots of a site for business purposes. The usual method adopted was for a building-owner to take a lease of a number of fields from the head landlord at a rent per acre, lay out the area in streets (which were adopted by the Corporation, as a matter of course, when completed to the satisfaction of the surveyor, and maintained in good order for twelve months). The usual price with streets made is from 3s. per lineal foot upwards, according to the width of the street. The leases were seldom less than 999 years, and such leases as ninety years would not be entertained. The ordinary house built is what is known as a kitchen house. Every house is provided with a yard, water-closet, and covered ashpit. A constant supply of water at high pressure was laid on, and gas fittings and penny-in-the-slot meters provided by the Corporation. Kitchen houses, with three bedrooms, with 13 ft. frontage and 36 ft. depth, ground rent from 35s. to 40s., and costing 70*l.* to build, were let at from 3s. 6d. to 4s. 6d. a week. Parlour houses, with parlour, kitchen and scullery, and three bedrooms, 14 ft. frontage and 42 ft. depth, cost 100*l.* to build, and were rented at from 4s. 6d. to 5s. a week. Then they had parlour houses, with the addition of a bath, which cost about 150*l.* to build, and were let at 15*l.* a year; and a somewhat better class let at 17*l.* to 19*l.* a year. The houses are built of good bricks and mortar, the outer walls 9 in. thick, parting walls 4½ in. thick, with chimney breasts; joists 9 in. by 1½ in. spruce; 1-in. redwood flooring, spruce rafters 4½ in. by 1½ in., purlins, 7 in. by 3 in., covered with slates. The joinery is of yellow pine. The exterior is faced, as a rule, with red perforated bricks, but in a few cases cement on common bricks is used. Party walls are carried up to slates, but not through, except in cases of shops adjoining dwellings The rents he referred to are inclusive of rates. At the present time the rates of Belfast are 7s. 3d. in the pound; but owners were allowed a discount, which brought the rate down to 6s. 1d. in the pound. He thought a great reason why workmen's houses should not be expensively built was that the value of sites frequently changed, and it might be to advantage to replace such houses with commercial buildings.

The Chairman remarked that apparently they had very different by-laws in Belfast from those they worked under in London, and it would be interesting to have a comparison of what they were allowed and were not allowed to do in the two places.

Mr. T. B. Simmons (Surveyor to the Malden and Coombe Urban District Council) expressed the opinion that the greatest stumbling-block in the way of making progress in providing reasonable dwellings for the labouring classes is the present unbearable by-laws. He believed that the class of house required to accommodate the poorer classes of the community is not generally built by the private speculator, and considered that the Housing of the Working Classes Act of 1890 ought to be extended so as to give an urban or a rural district council such power as to enter into a housing scheme so as to supply the wants of its respective locality when such wants are not fully provided for by the private landlord. The local authority is in a more favourable position to deal with the question than is the private builder for the period of repayment of loan, for the loan is eighty years and for the building sixty years, while the private builder undoubtedly would require to clear off all liability for the property in from fifteen to twenty years, as well as to make a reasonable percentage on his initial outlay. In some of the rural districts the housing question is being felt very acutely, and landlords, no doubt, would be willing to pull down the dilapidated cottages and replace them by healthier and more sanitary dwellings, but hesitate on account of the cost that would be entailed to comply with the present by-laws. He considered that the time has now arrived when the Local Government Board ought to make such modifications in its rural building by-laws as will reasonably reduce the cost of building healthy and wholesome cottages for the farm labourers. He saw no difficulty in framing such by-laws so that they would embrace any unit of a rural district which may become more of an urban character. In his opinion, the main points in the by-laws are to enforce the requirements for sufficient air-space in and about buildings; to enforce proper requirements for sanitary accommodation, and to see the same is provided so as in no way to interfere with the health and comfort of the public; to enforce the provisions for a good, wholesome, and sufficient water supply; to see that the site is properly prepared for the building so as to prevent dampness, and to see that the structure is put together in a sound and satisfactory manner.

Garden Cities.

Mr. Ralph Neville, K.C. (Chairman of the First Garden City, Ltd.), contributed a paper on this subject, which, in his absence, was read by Mr. Northcroft (the secretary of the company). The author described the scheme for the first garden city, near Hitchin, to be known as Letchworth. Of the 3,800 acres acquired, only 1,000 acres in the centre are to be devoted to building, and the remainder is to remain always as an agricultural belt consecrated to the goddess of hygiene.

Motor Omnibuses in Relation to Public Health.

Mr. E. Shrapnell Smith, in a paper on this subject, referred to the importance of rapid means of transit in dealing with the housing problem, and, touching on the question of motor omnibuses being an alternative for electric tramways, expressed the opinion that, in urban districts having a population ranging between 30,000 and 100,000, the benefits of the motor omnibus to public health would be most marked. He saw no reason why the size of motor vehicles should not be increased.

Mr. G. Whyatt (Grimsby) proposed a vote of thanks to the readers of the papers, and expressed the opinion that the housing problem was best met by private enterprise. He felt that the garden city enterprise was a good one. He did not see why local authorities were in a better position to deal with the question than the private builder, and it was not his experience that a builder wanted to clear off the liability in fifteen or twenty years. The local authority was obliged by the Local Government Board to put up a better class of house than the private builder, and, consequently, it cost them more. He did not see that the model by-laws could be much improved, because the speculative builder knew how to sail closely to them. He rather felt that tramways were doomed for small towns.

Mr. W. Towers (Building Surveyor, Leeds) seconded the motion, and asked Mr. Munce the width of the front streets; the minimum amount of open space to the houses; whether the site of the houses was concreted; if damp courses were provided; and if, in the 13-ft. frontage houses, the sculleries were built outside the main walls. He agreed that the by-laws ought to be modified, especially with regard to the width of streets. He did not mean in the width from house to house, but in the actual roadway, because the wider the roadway the greater was the cost of paving and flagging.

Mr. Young (Wallingford) remarked that, in his town, they had had the greatest difficulty in closing insanitary houses because there were no other houses for the people to go to.

The motion was heartily agreed to.

Mr. Munce said he thought the by-laws in Belfast were more stringent than those in England. With regard to the 4½-in. walls, Belfast was shrewd enough to go to Parliament for that power. The width of their streets was within the discretion of the Corporation. It was true that a narrow roadway was less expensive, but the difficulty was that the man who moved constantly to keep near his work could not keep his front garden in order, and they were, consequently, a failure. The rule now was to concrete the spaces in front of the houses. Forty feet between the houses was the minimum. They could require concrete under every house if the surveyor thought it necessary. There was a damp course for every house, and in all recently-built houses the scullery was outside.

A vote of thanks to the chairman concluded the day's sitting.

[Our report will be concluded next week.]

NATIONAL COMPETITION OF SCHOOLS OF ART.

THE annual exhibition of the prize drawings and designs of the Board of Education Schools of Art is now being held in the galleries of the Indian Section at South Kensington. Compared with former occasions, the show marks a falling off in the quality of the students' work, a fact strongly emphasised in the official reports of the Board. The exhibits consist mainly of decorative objects; there is a fair amount of applied design, and but little architecture proper; and of this, measured drawings of old work claim the largest proportion.

The chapter-house doorway at Southwell Cathedral, drawn by Mr. R. Atkinson, of Nottingham, is certainly the best. The inch-scale elevations are most carefully and thoroughly rendered; the full-size mouldings and carvings well shown, and the general spirit of the drawing is excellent and worthy of the silver medal which is awarded. The Church of St. Benet, Paul's Wharf, E.C., is a subject worthy of better drawing, while the gateway of St. John's College, Oxford, exhibited by Mr. W. J. Freeman, is carefully but incompletely done.

In the architectural designs there is an absence of interest and enthusiasm. Mr. Atkinson receives another silver medal for a design for "the lounge and staircase in a large hotel," and, so far as drawing and detail are concerned, nothing could be desired. But, in the matter of construction, the fundamental point of the whole scheme is destroyed by the

insufficient size of the four piers which receive the main arches carrying the dome and roof of the central space. "A Royal Palace," by Mr. H. Phibbs, of Shrewsbury, is scarcely dignified, nor is any importance given to the conception in the perspective view. Classic ornament is very well drawn in the contributions from Sunderland, for which well-merited awards are made to Miss Foote and Miss Stokoe.

One of the most interesting, and, in some ways the largest, sections is the work in stained glass. Students from Dublin are particularly successful with some excellent glass painting, for which Miss Rhind and Mr. Barden obtain silver medals. Mr. B. Lamplugh receives a similar award for some charming designs in Biblical subjects, many of which are applicable to the quarries of an ordinary domestic window.

Mural decoration is more in the form of pictures than possessing any architectural character. The work of the Regent-street Polytechnic school students is, however, an exception, and thus secures most of the prizes. Metal-work and furniture are disappointing. Some good work, however, is to be seen in relief panels, in which some of the sculpture from the Leicester school—Mr. Emerson's modelling in particular—is very good.

Pottery is both interesting in design and in colour. A gold medal is awarded to Mr. C. Vyse, of Hanley, for a memorial tablet in green glazed ware, which consists of a good modelled group of figures set in a frame of a somewhat restless design. Some vigorous work is shown by Mr. V. Webster, of Burslem, which is a welcome departure from the character of glazed ware for façades to which we have become accustomed. Students in the English pottery districts submit actual executed works, whereas the schools, which have not the same facilities, send drawings of designs, and the difference in quality and true feeling is pronounced.

Jewellery, although not extensively represented, is a very strong section, and if the other work undertaken by authoritative art education were as thorough, the effect on art generally in this country would be far-reaching. Miss Biggs, of Leicester, is awarded a gold medal for some delightful work in necklets, ring, and jewelled comb, in which the various materials are understood and arranged to display true values. Miss Clarke, of the same school, sends some charming work, which has additional interest in some tasteful enamels.

The show of wall-paper designs is surprisingly weak, although wall tapestries are good. Woven-fabric designs, however, are most excellent.

THE ARCHITECTURAL ASSOCIATION:

DAY SCHOOL AND EVENING CONTINUATION SCHOOL.

AN exhibition of students' drawings was held at the Architectural Association's premises in Tufton-street, Westminster, on Friday, the 21st inst., upon the occasion of the termination of the fourth year's work of the Day School and the first year of the Evening Continuation School.

A large attendance, which included the President, members of the Council, past and present students, and some well-known members of the profession, contributed to the success of the gathering.

The President, Mr. E. Guy Dawber, gave a short address upon the result of the past year's work, in which he drew attention to the remarkable progress made by most of the students. He considered the training to be thorough and practical, and predicted that, with continued prosperity, the schools would have a direct and important influence upon the future of the profession. In concluding his remarks, the President commented upon the work of the successful students, and announced the awards, which are referred to at the end of this review.

Sir Aston Webb expressed his pleasure in being present, and said he was much gratified by the interest and success of the exhibition. He hoped, in conjunction with Mr. Basil Champneys, to render practical assistance to the work as a visitor appointed by the Board of Architectural Education, and that the heavy ordeal of the three progressive examinations required by the Royal Institute of British Architects might some day give place to the gradual and more permanent training which the Architectural Association Day School offered Such recognition by the Institute would provide an additional incentive to the students for concentrated, serious work.

Mr. Maule, Master of the Day School, cordially thanked the President and Sir Aston Webb for their presence, and also for the great encouragement which their remarks gave to all who were interested in the work of the Association. He considered that the drawings demonstrated that the students had worked hard and well. He also welcomed the co-operation with the Board of Architectural Education, which was now assuming definite form. He then gave some personal impressions of the past year's work, and of the aims and objects of the Day School in general. He deplored the lamentable state of current public school education, which manifested itself in the majority of first year students. He complained that young men who were supposed to have received a fair education were invariably lacking in fundamental elementary knowledge. Students came to the Day School who had no power of expressing their thoughts in their own language, had not been trained in the all-important habit of observation, and had no faculty for hard work or application. Thus a great amount of the students' time was occupied in the first year's course in being grounded in the elements of an ordinary education.

The Master of the Evening Continuation School, Mr. T. F. Green, reviewed the work in the past year, and commented upon the progress of the various students.

The exhibition of drawings was in every respect interesting, and clearly showed that the scheme of education is a practical one.

In the first year's course of the Day School, drawing is mainly devoted to the copying of styles and of construction, arranged concurrently with lectures and visits upon the respective subjects. Measuring old work, drawing from the cast and sketching are also important parts of the tuition, while holiday work is undertaken at the direction of the master. When it is considered that these students come direct from school, and have little or no proficiency in drawing, the results are admirable, and demonstrate that the educational policy of the Architectural Association is proceeding on right lines.

When we turn to the work of the second year, this satisfactory condition is more marked, and, what is of great importance, the individuality of the student appears to be carefully considered. Elementary design is the principal work of the year, and with it lectures, bearing upon the subjects, are given in history and construction, and visits are made to museums, as well as to buildings in process of construction. All drawings made are of a practical working nature, such as would be required of a student were he in an architect's office. Such subjects as a stable, a village church, a farmhouse, and a coast-guard station are set, according to the convenience of the three working terms, and the actual results, in which much thought, individuality, and good drawing are to be seen, may be said to reflect great credit upon the methods of teaching. Again, comparing the relative progress of the two years, the instruction is thorough, and consequently of lasting use to the student.

The Evening Continuation School is taken advantage of by a number of ex-Day School students, who, having entered an office, desire to prosecute their studies in design of a higher nature, and it is satisfactory to observe that the progress of the earlier work is steadily maintained.

The following is a list of the awards:—

ARCHITECTURAL ASSOCIATION DAY SCHOOL.

First Year Awards.

Book prize for first place in history and construction tests—E. Stanley Hall, A.A. sketch book for first place in freehand drawing tests—V. C. Batalha Reis. Book prize for best work in studio during whole session—Maurice S. R. Adams. Master's prize for essay—W. J. Jones. Drawings selected for presentation to school portfolio—V. C. Batalha Reis, E. Stanley Hall, Maurice S. R. Adams.

Second Year Awards.

Travelling studentship of 15*l.* for studio work during session 1904-1905, holiday work during three vacations, and general progress—W. W. Scott Moncrieff. Extra studentship of 5*l.* for general excellence in studio and holiday work—F. T. W. Grant. End of session test (special prize offered by Mr. H. P. G. Maule), subject, "A Village Hall," award made by Mr. E. Guy Dawber—design placed first, F. T. W. Grant; bracketed second, A. G. Blackford, H. I. Merriman, and W. W. Scott Moncrieff; third, A. N. Peckham. Prize for studio work and excellence in draughtsmanship—H. I. Merriman; hon. mention, R. C. Coulson. Drawings selected for presentation to school portfolio—W. W. Scott Moncrieff, F. T. W. Grant, H. I. Merriman, and R. C. Coulson.

ARCHITECTURAL ASSOCIATION EVENING CONTINUATION SCHOOL.

Session 1904-5 *Awards.*

First prize, general excellence in studio work—A. Welford; second prize—J. K. Ground; third prize—C. Makin.

Correspondence.

GIBBON v. PEASE.

SIR,—As the defendant in this action, will you kindly allow me, through the medium of your journal, which has supported me throughout, to express my very grateful thanks to all those professional bodies and fellow architects and surveyors who so kindly and generously came forward to my help, both financially and as witnesses, etc.

It was a great disappointment to me to lose the case, which I took up entirely in good faith, believing it differed entirely from Ebdy *v.* McGowan, as I still hold it does. I felt I had every chance of success, and thereby reversing the decision in the latter case, which I considered had been misunderstood for many years, though perhaps it was rather too large an undertaking for a young man only commencing his career and with little capital. I can only thank those who have helped me for their kind support, which I regret has been of no avail. C. EDW. PEASE.

16, Clifford's-inn.

CHELSEA PUBLIC BATHS.

SIR,—As one of the London builders who tendered for the above, we write to protest against the action of the Chelsea Borough Council in passing over three substantial and well-known London firms in favour of a Plymouth contractor, whose tender was over 1,000*l.* higher than the lowest amount.

We think the Council should be asked to give their reasons for this unusual proceeding. It seems a great waste of time and money to builders tendering, besides throwing away the ratepayers' money, if a large contract like this is to be settled in such a manner.

"UNSUCCESSFUL."

COURT OF COMMON COUNCIL.

THE usual fortnightly meeting of the Court was held at the Guildhall on Thursday last week.

On the recommendation of the Streets Committee, it was agreed that the following clause, setting forth the manner in which electrical apparatus and circuits in vaults and areas may be protected, be added to the regulations for vaults and areas:—

> "ELECTRIC LIGHTING, ETC.—That in connexion with any provision in vaults, areas or cellars for the use of electricity for lighting power or for any other purpose, the pressure between any pair of terminals or conductors shall not exceed 450 volts, and the whole of the conducting circuit shall be insulated in the best possible manner, and be encased in a continuous metallic sheathing, efficiently connected to earth, so as to ensure at all times an immediate and safe discharge of electrical energy."

London Building Acts (*Amendment Bill*).—A letter was received from the Lewisham Borough Council, dealing with this Bill, and urging that "as the London Building Act of 1894 is already complicated by the Amendments of the Act of 1898," a new Building Act for London should be formulated.

The letter was referred to the Special Committee of the Court.

METROPOLITAN ASYLUMS BOARD.

THE usual fortnightly meeting of the Managers was held at the offices on Saturday last week.

Among the correspondence received from the Local Government Board were orders sanctioning the provision of additional bathing, lavatory, and disinfecting accommodation at Joyce Green Hospital, at a cost of 1,000*l.*, and certain alterations at the laundry at the Eastern Hospital, at a cost of 4,586*l.*

New Central Stores.—It was agreed to apply to the Local Government Board for an order authorising the Managers to incur an expenditure not exceeding the sum of 31,850*l.* on the erection of the New Central Stores, such expenditure to be defrayed by means of a loan repayable within a period not exceeding thirty years.

Illustrations.

SCULPTURE: "LA SEINE ET L'ESCAUT."

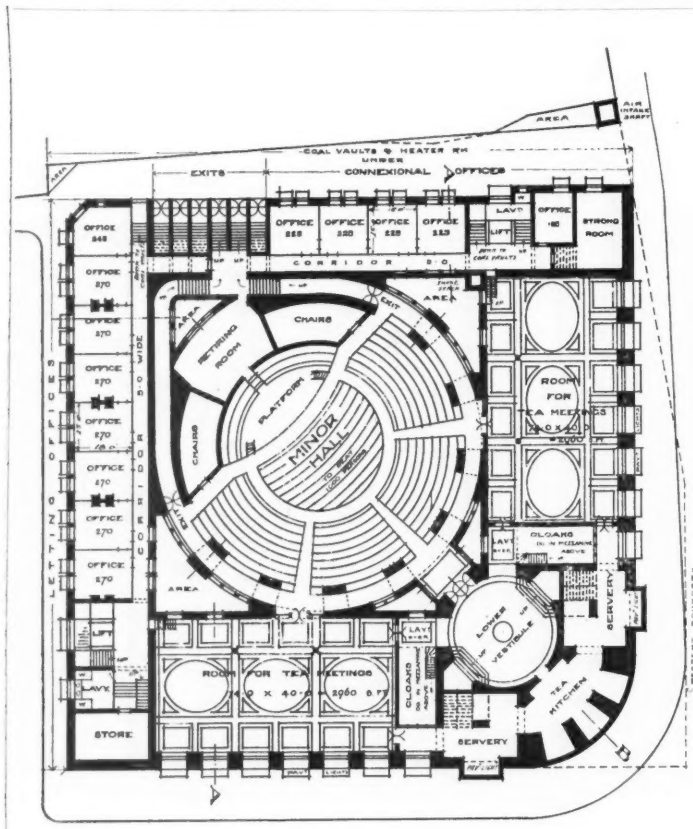
THESE two figures on pedestals, which were prominent objects in the sculpture hall at the Salon this year, were commissioned by the French Government from M. C. H. Theunissen, to decorate the entry on to one end of the new bridge of the canal at Saint-Quentin. They represent the two rivers, the Seine and the Escaut, which are connected with the canal.

There will probably be two corresponding pedestals and figures erected at the other extremity of the bridge, but as to these we have at present no information.

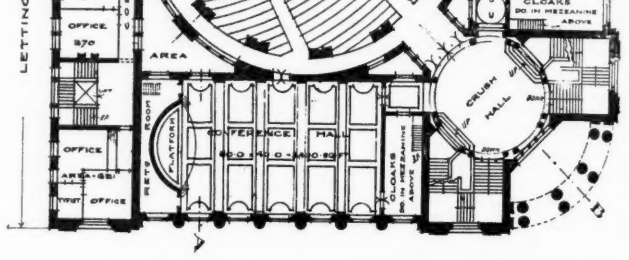
DESIGN FOR WESLEYAN HALL, WESTMINSTER.

WE illustrate this week the design submitted in the second competition for the Wesleyan Hall at Westminster by Messrs. Crouch, Butler, & Savidge, of Birmingham.

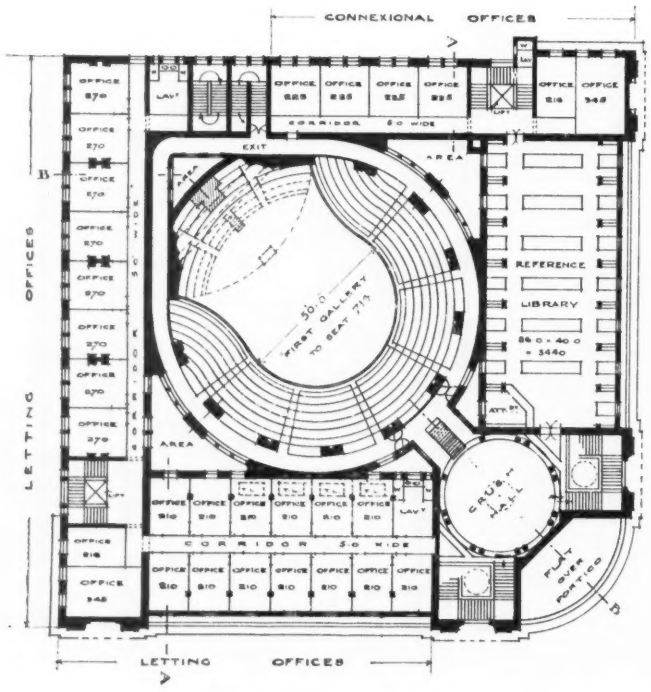
We have in this case given the plans of four of the floors, because it would not have been possible with less to have explained fairly the peculiar feature of this plan, which is, to find the seat-room in the large hall by extending it vertically rather than horizontally, the whole circular centre of the plan being devoted to the small and large halls, occupying the same area but differing much in height. We do not think this the best way of treating a large assembly hall, but in this case it has the merit of getting over the difficulty arising from restricted space on the plan, and the whole arrangement is not only very clever but displays a unity and symmetry of conception which is satisfactory in an architectural sense. As a general rule, an angle entrance is not the best for the plan of a large building; in this case, however, the employment of the circle for the principal and central interior apartment fits on very well with the angle entrance; and architecturally there was something to be said for this position in view of the fact that it is the most prominent point in the exterior street view.



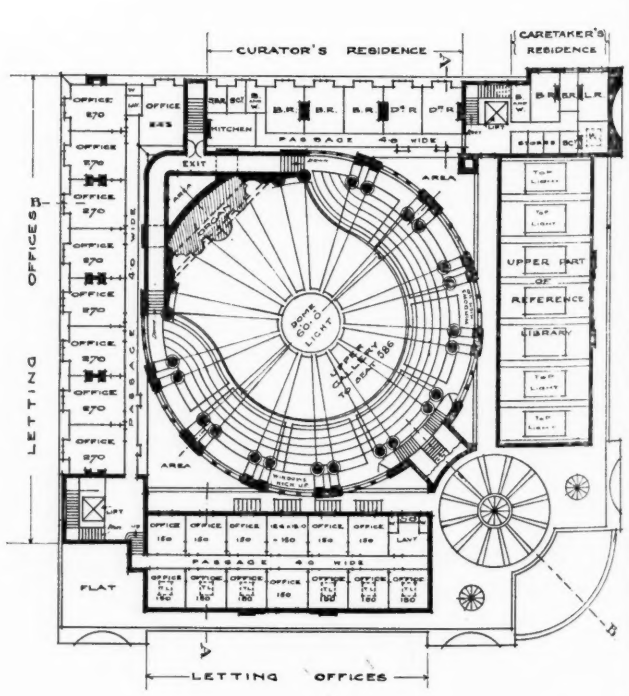
BASEMENT · PLAN
SCALE 60 FEET TO 1 INCH



FIRST · FLOOR · PLAN

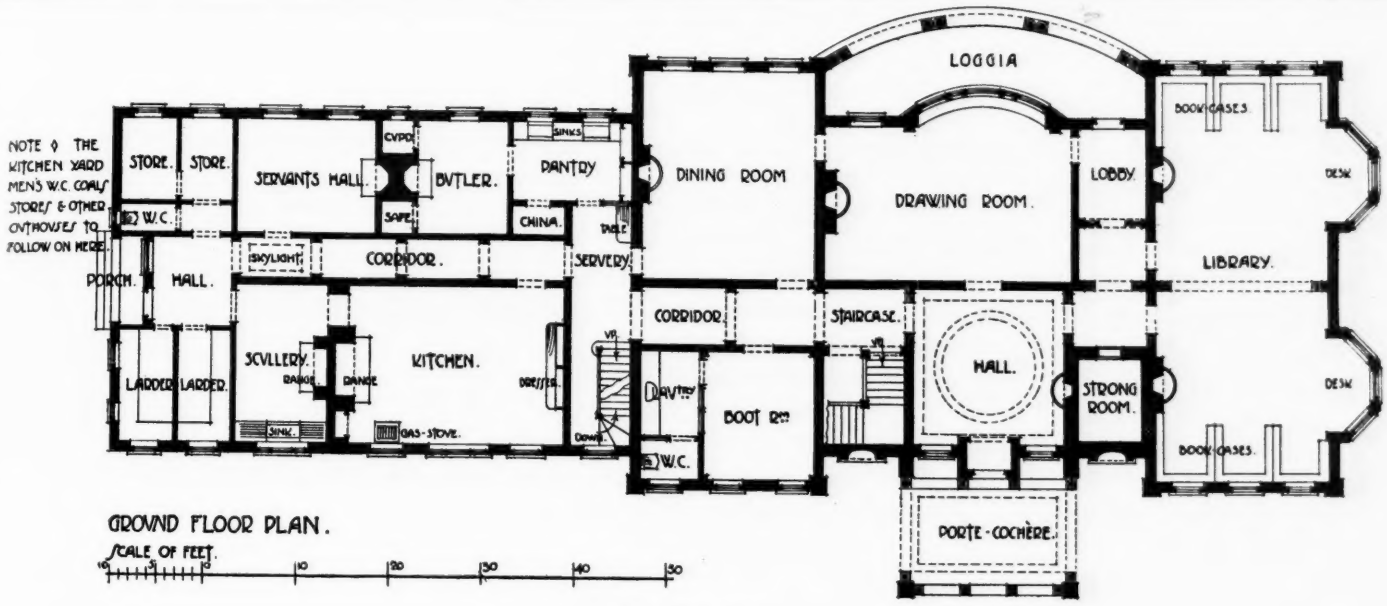


SECOND · FLOOR · PLAN
SHOWING · FIRST · GALLERY
AND · 3RD · FLOOR · OF · OFFICES



PLAN OF UPPER GALLERY
SHOWING · 4TH FLOOR · OF · OFFICES &c.

Competition Design for Wesleyan Hall. Plans.



"Britwell," Herts.

We fear we could not have recommended for execution a building with the great hall planned on these lines; but nevertheless the design is a very able one and does great credit to its authors.

"BRITWELL," BERKHAMSTED.

THE accompanying plan and description is of a proposed house for Sir John Evans, at Berkhamsted, Herts.

The chief point aimed at in the design was to provide a fairly comfortable and dignified house, having the usual reception-rooms, with a large library capable of being divided into two rooms well provided with bookcases, accommodation for two separate desks, and plenty of light, with the centre of the room left free for reception purposes or billiards.

The loggia protects the drawing-room from the full blaze of the southern sun, and the verandah over forms an adjunct to the best bedrooms which open on to it.

The culinary offices in the kitchen block face northward, and the servants' rooms face southward.

All the sanitary requirements, with the exception of the pantry sink, are in one block on the northern side of the house.

Messrs. Hubbard & Moore are the architects.

HOUSE AT HASLEMERE.

THIS house has recently been erected near Haslemere.

The walls are faced with many-tinted clamp-burnt bricks, and the roof is tiled.

Messrs. Chapman & Lowry, of Graysholt and Haslemere, are the builders. Mr. E. J. May is the architect.

THE LONDON COUNTY COUNCIL.

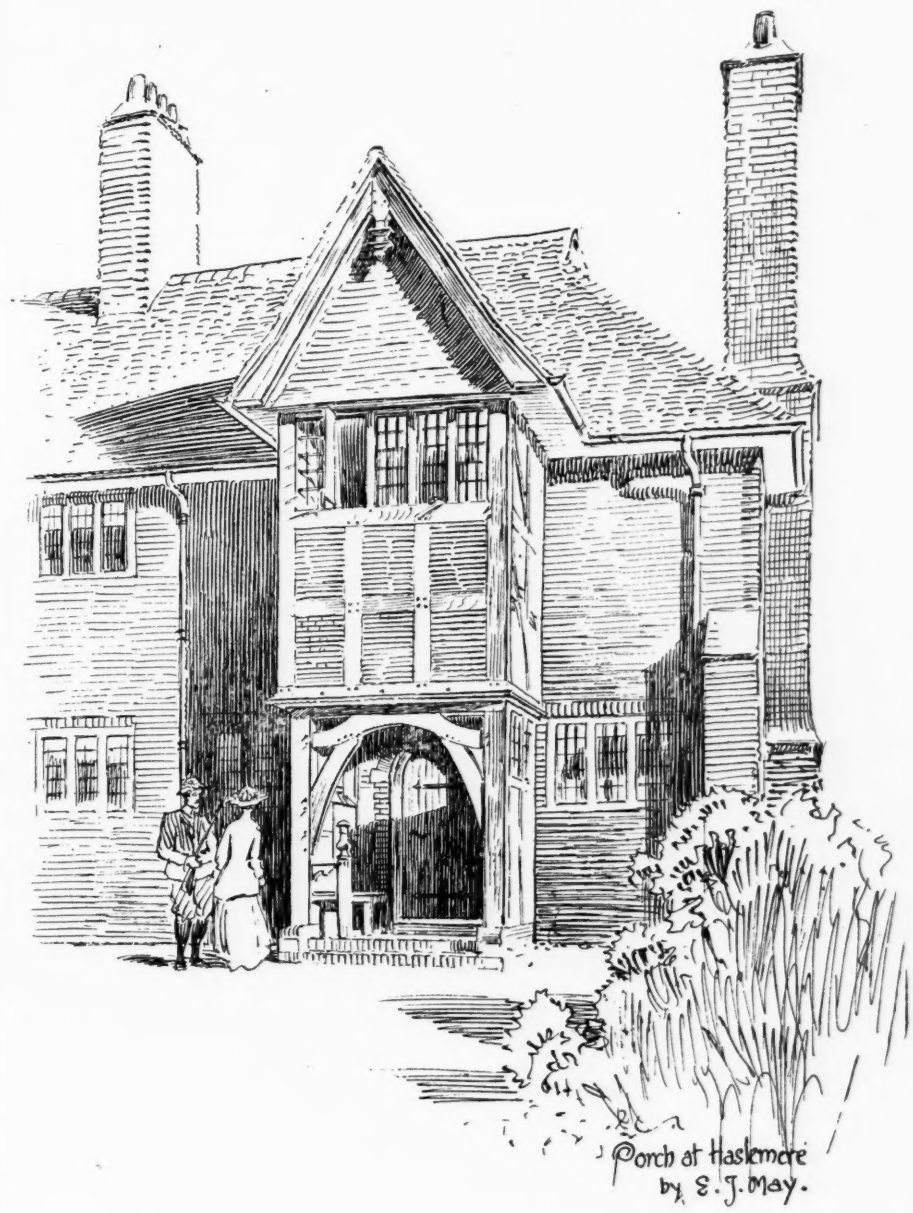
THE usual weekly meeting of the London County Council was held on Tuesday, in the County Hall, Spring-gardens, Mr. E. A. Cornwall, Chairman, presiding.

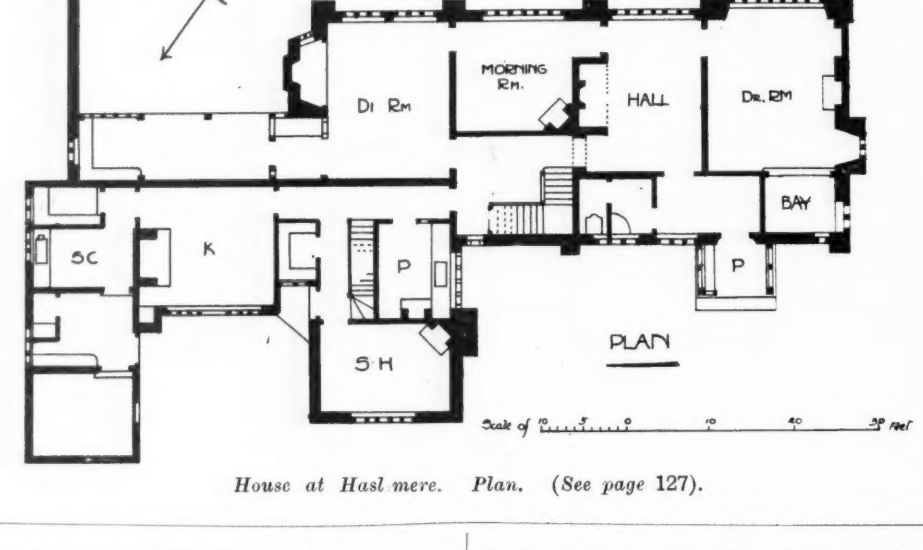
Loans.—On the recommendation of the Finance Committee, it was agreed to lend Camberwell Borough Council 1,236*l.* for street improvement, and 6,000*l.* for purchase of open space; Lewisham Borough Council 660*l.* for concreting bed of river Ravensbourne; North Surrey School District School Managers 700*l.* for works at Anerley schools; Poplar Borough Council 4,295*l.* for pipe sewers, and 10,818*l.* for electric lighting purposes: Hammersmith Guardians 5,640*l.* for poor law purposes; St. Marylebone Guardians 3,000*l.* for poor law purposes; Southwark Borough Council 7,400*l.* for erection of stables, etc., at depôt; and Woolwich Borough Council 9,169*l.* for purchase of site for municipal buildings, etc.

Quantity Surveyors.—The General Purposes Committee brought up the following report:—

"We have had under consideration the question of the steps to be taken with regard to the quantity surveyors employed by the Council to prepare bills of quantities for architectural works, and those who were engaged by the late School Board for London to take out quantities for new schools, enlargements, etc. The firms with whom the Council entered into agreements, in accordance with its resolutions on April 3, 1900, and July 28, 1903, are seven in number. The late authority employed eight firms, the names of two of whom appear on the Council's list. The terms under which this work was done for the late authority differ from those laid down by the Council, and as we are of opinion that it is undesirable that there should be two sets of conditions dealing with the same kind of work, we have communicated, with one exception, with the firms employed by the late authority, and have ascertained that they are prepared to take out quantities for new schools, enlargements, etc., on the conditions approved by the Council. The Education Committee consider it desirable, having regard to the anticipated large amount of work in connection with educational buildings, that the list of quantity surveyors engaged in this work should not be curtailed. We propose that the agreements entered into by the late authority with certain surveyors should be terminated, and that the number of quantity surveyors on the Council's list should be increased. We recommend—

(*a*) That notice be given to determine the agreements entered into by the late School Board for London with the undermentioned quantity surveyors: Mr. F. H. A. Hardcastle, 5, Old Queen-street, S.W.; Messrs. Arding, Bond, & Buzzard, 22, Surrey-street, W.C.; Mr. F. Downing, 12, King's





House at Hasl mere. Plan. (*See page* 127).

Bench-walk, E.C.; Mr. H. H. Robinson, 8, New-court, Carey-street, W.C.; Messrs. W. H. & P. B. Strudwick, 2, New-court, Carey-street, W.C.; Messrs. Young & Brown, 104, High Holborn, W.C.

(*b*) That the undermentioned names be added to the list of quantity surveyors to be employed for architectural works; that the solicitor do prepare and complete the necessary agreements in accordance with the Council's standing orders relating to quantity surveyors; and that the seal of the Council be affixed to the agreements when ready: Messrs. Arding, Bond, & Buzzard, 22, Surrey-street, W.C.; Mr. F. Downing, 12, King's Bench-walk, E.C.; Mr. H. H. Robinson, 8, New-court, Carey-street, W.C.; Messrs. W. H. & P. B. Strudwick, 2 New-court, Carey-street, W.C.; Messrs. Young & Brown, 104, High Holborn, W.C.

The recommendations were agreed to.

Tramway Subway.—On the recommendation of the Highways Committee, 50,000*l.* was voted in respect of the acquisition of lands and easements in connexion with the construction of the tramway subway from Southampton-row to the Victoria-embankment.

Rotherhithe Tunnel: Widening of Brook-street, Ratcliff.—On the recommendation of the Bridges Committee, it was agreed that expenditure of 2,600*l.* on capital account be sanctioned for the widening of Brook-street, and the acquisition of Nos. 76, 78, and 86, Brook-street; that consent be given under section 72 of the Metropolis Management Amendment Act, 1862, to a widening of Brook-street, Ratcliff, proposed to be undertaken by the Council of the Metropolitan Borough of Stepney.

White Hart-lane Estate.—The Housing of the Working Classes Committee recommended as follows, and it was agreed:—That the additional expenditure of 439*l.* 19s. 8d., incurred in the execution of extra work under the contract with Mr. H. Lovatt for the erection of 141 cottages on section A of the White Hart-lane estate, be sanctioned. It was also agreed that the price to be paid to Mr. G. E. Pulford for the twenty-four third-class cottages to be erected by him on section B of the White Hart-lane estate be 156*l.* 10s. per cottage, with an extra allowance of the 4*l.* 10s. for each corner cottage; and that the solicitor do take such steps as may be necessary to complete the matter accordingly.

Totterdown-fields Estate: Erection of Cottages on Section B.—The same Committee reported as follows, the recommendation being agreed to:—

"On July 12, 1904, the Council accepted the tender of Messrs. F. & H. F. Higgs for the erection of cottages on section B. of the Totterdown-fields estate, Tooting, and considerable progress has since been made with the work. Nine blocks, comprising 174 third-class cottages, still remain to be commenced, and our attention has been drawn to the desirability of permitting some slight modifications in the specification, which would result in a reduction of the cost of erection, without unduly detracting from the character of the dwellings. The contractors have offered to erect three blocks, Nos. 46, 47, and 48, in accordance with the modified specification for a lump sum of 12,500*l.*, including 522*l.* as provision money, and to complete the work under the same terms and conditions as that already commenced. The offer represents a saving of approximately 4 per cent. on the contract prices, and is one which we would advise the Council to accept, not only for the three blocks in question, but also for the remaining six blocks which are similarly planned. We recommend that the contract with Messrs. F. & H. F. Higgs for the erection of cottages on section B. of the Totterdown-fields estate be so varied as to allow of the erection of blocks 46 to 54, both inclusive, in accordance with the modified specification at a cost of 37,500*l.*, inclusive of 1,566*l.* set apart as provision money for extra works. . . ."

Wedmore-street Estate, Upper Holloway.—The Committee reported that the third block of Wessex-buildings on the Wedmore-street site, Upper Holloway, is almost completed. The block will contain accommodation for 340 persons in forty tenements of two rooms, and thirty tenements of three rooms. The Wedmore-street site was acquired by the Council under the provisions of Part III. of the Housing of the Working Classes Act, 1890. The first and second blocks of dwellings erected on the site were opened for occupation in November, 1904, and contain accommodation for 710 persons, so that with the completion of the third block accommodation for 1,050 persons will have been provided on the estate in five tenements of one room, 140 tenements of two rooms, and eighty tenements of three rooms.

Tramway Junction, St. George's-circus.—The following recommendations of the Highways Committee were agreed to:—

(*a*) That the estimate of expenditure on capital account of 4,500*l.*, submitted by the Finance Committee, be approved in respect of the construction, for the underground conduit system of electrical traction, of a junction line at St. George's-circus, between the tramways in Borough-road and Blackfriars-road.

(*b*) That expenditure, on capital account, not exceeding 4,500*l.*, be sanctioned for the construction of a junction line at St. George's-circus, between the tramways in Borough-road and Blackfriars-road; and that the Highways Committee be authorised to arrange for the execution of the work.

Having transacted other business the Council adjourned.

APPLICATIONS UNDER THE 1894 BUILDING ACT.

THE London County Council at their meeting on Tuesday dealt with the following applications under the London Building Act, 1894. The names of applicants are given between parentheses:—

Lines of Frontage and Projections.

Hackney, Central.—An addition to No. 46, Kenninghall-road, Clapton, to abut upon Nightingale-road (Mr. C. Thomerson).—Consent.

Fulham.—A projecting clock, an iron and glass shelter, and a projecting stone, iron, and concrete balcony to the addition of the Town Hall, Harwood-road, Fulham (Mr. F. Wood for the Council of the Metropolitan Borough of Fulham).—Consent.

Hampstead.—Buildings upon the site of Nos. 156, 158, and 160, High-road, Kilburn (Mr. G. A. Sexton for Mr. B. B. Evans).—Consent.

Hampstead.†—The retention of an addition to All Souls' church, Loudoun-road, Hampstead, abutting upon Alexandra-road (Messrs. Nicholson & Corlette).—Refused.

Marylebone, East.†—A projection and balcony at No. 80, Portland-place, St. Marylebone (Messrs. Boehmer & Gibbs for Messrs. Matthews, Rogers & Co).—Refused.

Paddington, North.—One-story shops in front of Nos. 435, and 437, Edgware-road, Paddington (Messrs. Gardiner & Theobald for Meux's Brewery Company, Limited).—Refused.

Paddington, North.—One-story shops in front of Nos. 439, to 451 (odd numbers only), Edgware-road, Paddington, to abut also upon Maida-hill West (Messrs. Boehmer & Gibbs for Mr. W. Hirsch).—Refused.

Width of Way.

Camberwell, North.—A one-story building between Nos. 49, and 55, Crown-street, Camberwell, with external walls at less than the prescribed distance from the centre of the roadway of the street (Mr. A. E. Mullins for the Davis Gas Stove Company Limited).—Consent.

Fulham.†—An addition at the rear of Nos. 29, and 31, Jerdan-place, Walham-green, with external walls at less than the prescribed distance from the centre of the roadway of Vanston-place (Mr. W. C. Poole for Mr. Jones).—Consent.

Hackney, North.—Retention of a wooden stage and enclosure at the rear of No. 34, Newington-green, Hackney (Mr. R. Manley for the Mildmay Radical Club).—Consent.

Width of Way and Frontage.

Paddington, North.—One-story shops in front of Nos. 431, and 433, Edgware-road, Paddington, with external walls at less than the prescribed distance from the centre of the roadway of Crompton-street (Messrs. Gardiner & Theobald for Messrs. Matthews & Sons, Limited). Refused.

Line of Frontage and Construction.

Hammersmith.—That the application of Mr. I. Kiralfy for an extension of the periods within which the erection of a gangway in Wood-lane, Hammersmith, was required to be commenced, and of the period within which such gangway was allowed to be retained, be granted.—Agreed.

Width of Way and Space at Rear.

St. Pancras, South.—Buildings on the site of Nos. 183, and 185, King's-cross-road, and Nos. 31, and 32, Field-street, St. Pancras (Mr. E. J. Harrison for Mr. D. E. Cohen).—Refused.

Space at Rear.

Southwark, West.—A modification of the provisions of section 41 with regard to open spaces about buildings, so far as relates to the proposed erection of the "Surrey Arms" public-house, No. 133, Blackfriars-road, Southwark, with an irregular open space at the rear (Mr. H. Smith for Messrs. West & Co.).—Consent.

Southwark, West.—A modification of the provisions of section 41 with regard to open spaces about buildings, so far as relates to the proposed erection of buildings on the site of Nos. 31-36, Borough-road, and Nos. 67, and 69, Lancaster-street, Southwark (Mr. G. A. Lansdown for Messrs. P. Boswell & Sons).—Consent.

Bethnal-green, South-west.—Modification of the provisions of section 41 with regard to open spaces about buildings, so far as relates to the proposed erection of a building on lot No. 22, Turville-street, Bethnal-green, with an irregular open space at the rear (Mr. C. R. Peters).—Consent.

Space at Rear and Construction.

Strand.—A projecting water-closet at the rear of Nos. 98, and 100, Regent-street (Mr. R. H. Kerr for the Aquascutum Company).—Consent.

Buildings for the Supply of Electricty.

Hammersmith.—A generating-station and works on a site to the eastward of the generating-station of the Central London Railway Company, and approached from Wood-lane, Hammersmith (Mr. J. Slater for the United Kensington and Knightsbridge and Notting-hill Electric Lighting Company).—Consent.

Height of Buildings, etc.

Fulham.—Enclosures on the top of the projecting staircase from Block I. at the Manbré Saccharine Works, Brandenburgh-road, Fulham (the Manbré Saccharine Company, Limited).—Consent.

Formation of Streets.

Wandsworth.—That an order be issued to Messrs. D. Young & Co., sanctioning the formation or laying out of new streets for carriage traffic out of the western side of Thrale-road and northern side of Nimrod-road, Streatham (for Messrs. A. W. Gosden & H. F. Crunden).—Consent.

Wandsworth.—That an order be issued to Messrs. Milner, Son, & White refusing to sanction the formation or laying out of new streets for carriage traffic on the Furzedown Park Estate, Rectory-lane, Streatham).—Refused.

The recommendations marked † are contrary to the views of the local authority.

THE INSTITUTE OF SANITARY ENGINEERS, LIMITED.—The Institute of Sanitary Engineers have arranged to hold their Summer Outing at Southampton on Saturday, Sunday, and Monday, July 29, 30, and 31.

THE ROYAL SANITARY INSTITUTE:
Rural Water Supply.

THE members of the Royal Sanitary Institute held a sessional meeting at the New Medical Schools, Downing-street, Cambridge, on Saturday last week, when the "Water Supply Problem in Rural Districts" was discussed. The discussion was opened by Professor G. Sims Woodhead, M.A., M.D., and Consulting Medical Officer of Health to the Cambridge County Council, who read a paper on the subject.

Professor Woodhead said that some years ago it fell to his lot to examine a considerable number of water supplies, especially those of large towns, and, in consequence, he had become acquainted with the tremendous difficulties encountered by many rural authorities in obtaining adequate and pure water supplies. He was bound to say that as regarded water supplies, communities, perhaps even more than individuals, were as absolutely selfish and inconsiderate as it was possible for men to be. The man who had a water supply, or a community in the same position, was the Greek who looked upon it as something that he had acquired a natural right to, to share which the outer barbarian in the next parish could have no sort of claim, at any rate in the same pure condition in which it came to him. He was careful to take out his own supply above his town or village, and, as a rule, he sent to the supply in return his sewage in a more or less crude form. Were this confined to river and streams it would be bad enough, but when springs and wells of one district were contaminated by the sewage of another, the problem of supplying pure water became a very difficult one indeed. It had been maintained that large cities were at a great disadvantage as compared with rural districts, but most of those who had given any consideration to the matter had come to the conclusion that the problem of the water supply in rural districts was a much more pressing one than that of the supply to the large manufacturing towns, though there, undoubtedly, as the best catch-water areas were gradually acquired, something would have to be done ere long to keep the sewage from what at present were looked upon as outside the possibility of becoming water supplies. In illustration of his contentions, Professor Woodhead went on to refer in detail to the water supply of Maidstone, where there was an outbreak of typhoid fever, and recounted the methods adopted by the authorities to improve the water. They cut off the sources from unsatisfactory areas—in this instance they were surface wells and springs alongside the railway—and took only the water that came from the greensand. This was of good quality to begin with, but, to improve it, they laid down a couple of excellent sand-filter beds, and constructed a covered-in clear-water tank, from which the water could be pumped directly up to a reservoir. It was examined regularly, chemically and bacteriologically, at intervals, and at first was not entirely satisfactory, but, after an old pump-hole had been cleared out, iron replacing wood everywhere, a very pure and stable water was delivered. The filters were allowed to run for a whole year before being "skinned." This, he believed, was one of the most important factors in the purification of water. In warm weather the filter beds were literally forests of algous growth, swarming with micro-organisms, but the water in the clear-water tanks was limpid, practically free from micro-organisms, and of excellent chemical composition. The collecting wells in connection with the Maidstone supply were already closed in and sealed down, but none of the surface drainage areas or the wells were fenced off or protected in any way. But under the scheme for making the supply of this county town absolutely pure, strong fences were carried round all the areas between the outcrop of the water and the collecting well. Moreover, the space between the outcrop and the well had been filled up, clean chalk being first laid down, and then on the surface of that hundreds of loads of clean fine white sand, with sufficient soil to afford nutriment to a close crop of grass. By those means about as perfect a filtering area as it was possible to obtain had been secured. They knew, as was especially insisted by Dr. Vivian Poore, that a layer of good close vegetation, especially of grass, was almost as good as the algous growth that was seen on the surface of an ordinary sand filter, and, with the sand and the rammed chalk, it constituted a protective layer certainly equal to the best sand-filter made. As regarded the protection of the well-head, most efficient precautions had been taken to prevent anyone tampering with the seals. Small brick "cabins," with thick concrete roofs, concrete raised thresholds, and thick oak doors with strong locks had been built. One of them was placed at the highest point of each of the filter beds, so that contamination through the opening of the well was practically impossible. Anyone who had to deal with a water supply similar to that at Maidstone would, he was sure, learn something from a visit to those collecting grounds. Cambridge was exceptionally fortunate in having an abundant supply of water in a chalk well at Fulbourn, and in wells from the chalk and lower greensand at Cherry-hinton, though even in Cambridge, until the Fulbourn supply was obtained, there was considerable difficulty in meeting the various demands made. When, however, they came to the rural district, one was simply horrified at the shifts that had to be made to obtain water even of moderately-good quality. In some villages, the inhabitants depended entirely for their water supply upon surface wells, many of which were contaminated with sewage. In other instances, especially in the case of detached groups of houses, ponds, rivulets, and ditches, many of which were completely dried up in the summer, were practically the only water supplies to be obtained, and some years ago he was taken by the then Chairman of the Cambridge County Council to see a water supply that was in constant use, which, on bacteriological examination, gave a number of micro-organisms as great as one usually found in diluted sewage. Not far away was an isolation hospital, which was nearly half a mile as the crow flew, and a considerably greater distance by road from a roadside pump, which was the only supply for the hospital, whilst, in the same district, the workhouse, until comparatively recently, was entirely dependent upon what one might call a scratch supply. They had been told that it was impossible to do anything with those districts, and if they were to be left to themselves, and could be entirely isolated, it might be true enough; but he maintained that larger communities, even in their own interest, had laid upon them the duty of taking up this question of water supply to their poorer or more scattered brethren. He was gradually coming to the opinion that the question of water supply was one to be settled, not by individual communities, but by a National Water Board with County Committees. In Cambridge, they had water for the whole county and some to spare for neighbouring counties, but until they knew what was really required for the county, and until some perfectly independent Board could take up the matter, it was not safe for the Cambridge authorities to allow any tampering with their sources of supply. In the hilly districts, and even in certain of the low-lying districts, water was to be obtained from chalk or from the greensand, and the problem was a comparatively simple one. But what was to be done in areas of low rateable value, where it was necessary to bore deep wells at great expense if anything but surface water was to be supplied? If there could be some combination between a number of those areas, if the matter could be taken up by the County Council, something might be done; but until they had some central organisation, through which a readily available supply could be distributed as widely as possible, they would never have the best available system carried out. Even short of that, however, some centralisation was necessary, especially in advising and helping less wealthy communities. Some such method of filtration as that adopted at Maidstone might, with great advantage, be adopted for surface water in districts entirely dependent upon highly-contaminated surface wells. With grass and sand filters the rain water collected on the roofs of houses might be much more utilised than it was. Accepting the fact that surface water was the most dangerous water with which they had to deal, they might also accept Dr. Poore's statement that a layer of active vegetation would, in most cases, purify water better than, or as well as, the best sand filter extant, and if the two were combined, as at Maidstone, he believed it possible to have tanks or wells of filtered water available at comparatively trifling cost, and therefore suitable for small communities. Placed at the bottom of hollows, and if the water from the roofs of houses or the surface water from land not too highly cultivated could be brought to them, those filter beds would produce an excellent supply—except, of course, in very dry weather. Even then the water from ponds might, after preliminary sedimentation, be placed on them. He suggested it only as a temporary measure, and where people were in great difficulties, as almost any kind of water could be purified in that way, especially after a preliminary rough filtration through sand to keep back such matter as would clog the soil on which vegetation was growing.

He thought it must be recognised, however, that we were gradually coming to a point at which the selfishness of communities must be counteracted by the constitution of some central organisation empowered to control water supplies and empowered also to prevent the contamination of any possible supply with sewage. He was aware that certain well-informed authorities maintained that rivers were the natural drains. With Lincoln before them they were apt, and he thought very justly so, to be very sceptical on the point. He ventured to think that most of them were of opinion that rivers were natural water supplies, and that they had only been converted into drains because people had not had sufficient foresight to see that in time we should not have sufficient water for our growing population without them. The rivers must be kept as clean as possible, so that when necessary their water could be thrown on to more or less perfect filters, and a fairly good potable water so obtained. As regarded rural districts, he was satisfied that co-operation and filtration were our passwords, and that, as regarded urban districts, we must also ask for co-operation; and with the aid of co-operation we must obtain purification. We had still plenty of water, even in dry years, if what we had could be properly purified and equitably distributed. Where a pure water supply was concerned, cost should scarcely be a factor to be considered, though with co-operation the cost of a good water supply should never be greater than even small communities could easily bear.

In concluding, Professor Woodhead said he wished to ask those interested whether or not some plan by which the Cambridge rural districts could be supplied with good water and plenty of it could be formulated. If it could be done for Cambridge, the problem would be solved for many other counties. Dr. Tresh has made a very good beginning with Essex—one of the counties which suffered very much as Cambridgeshire did.

Mr. J. E. Purvis followed, and placed before his audience by means of a blackboard various analyses of drinking water, including two from Cambridgeshire village pumps. Those waters had been condemned, both chemically and bacteriologically, he said, and were absolutely dangerous from a health point of view. But they were not isolated cases. There were thousands of such sources contaminated in the south of England, and also, but in less number, in the north. He did not say that those who drank that water would suffer from typhoid or any other of those particular diseases; but he did say that water which contained such large quantities of organic matter as those samples tended to lower the system and decrease the normal strength. His own part of the discussion was to illustrate the limitations in reading water analyses reports. In regard to the two particular reports, there was no doubt at all that they would be officially condemned. Still, such conclusions were not always so certain, and he thought some rules were necessary with regard to the instructions to be conveyed to the chemist, who, he held, should know the whole history of any water sent him for analysis. He should know the geological character of the source of supply, the method of storage and distribution, and the rainfall just before the analysis was taken. In fact, he should visit the place himself. Without such knowledge, they could depend upon it, the chemist would have some doubt in making up his judgment.

Finally, he did not hold that a purely chemical analysis was sufficient of itself. There ought to be a bacteriological examination also, and the final judgment should rest with the two in collaboration. For they could have water organically pure from a chemical point of view, and still it might contain the germs of disease. And, on the other hand, they might have water which was bacteriologically pure, and which, chemically, would be suspicious or even dangerous. Mr. Purvis also referred to the dangers arising from extremely hard and extremely soft waters, which were both liable to take up a certain amount of lead.

Professor Hughes endorsed the suggestion that some form of a superintendence board in respect of water should be instituted. A house could not be erected in Cambridge without the plan being laid before and sanction obtained from the Mayor and Corporation, but an ignorant peasant could dig a well in his back garden and get a supply of water without submitting to any supervision.

Mr. H. G. Fordham, speaking from an administrative point of view, said the limits laid down by Parliament were very narrow. To his mind, there would be some difficulty about areas, because the area of a county was not consistent with that covering the water supply. He hesitated somewhat in accepting for the County Council complete jurisdiction in such matters.

Mr. Martin said that in the Fen district the rivers were the chief source of supply, and the necessity of keeping them clean could not be too greatly emphasised.

Dr. Kinnicutt agreed that the water supply in the rural districts was not inferior to that of the towns, for the reason that the latter was better looked after. In the rural districts, the farmer usually sank his well where he pleased, and also a cesspool. Very often one supplied the other; but where the supply of drinking water was impure they had the power in the States to prohibit its use.

Dr. Armistead said that one of the main difficulties in regard to the adoption of a water scheme for a village was the cost. Some villages, which were formerly supplied by shallow-dug wells liable to pollution, were now supplied by wells bored to a depth of 100 ft. or more into the chalk and lined with iron tubes. Other villages on the gault had been supplied by wells bored through the gault into the lower greensand, and a good supply of soft water so obtained.

Dr. Luddington said there were many places where the supply must of necessity be obtained from the river, and not only that, but unless it was kept pure the health of the inhabitants who lived on its banks must suffer. The principle at stake was a matter of national importance. He thought the Government should appoint inspectors to visit the different rural district councils and give practical advice—inspectors who would not hesitate to pull up offending parties, such as the inhabitants of the village in which he resided suffered from.

Dr. Annington advocated the purifying of the wells rather than that they should be shut down summarily.

Mr. Moor said that, with regard to the fear of the prevalence of organic matter in water, it would necessitate them drinking about 1,000 gals. to get as much as was in a teaspoonful of soup.

Dr. Savage agreed with Mr. Purvis, and advocated that where the surface was found to give an impure supply it should be improved by boring deeper and covering with a proper pump. That, he maintained, was a solution in a great many cases. But there must be different standards of testing water.

Miss Cochrane thought that sufficient use was not made of rain-water, which, more often than not, was allowed to run waste in channels round the houses, making the property in that way damp. That was for rural districts. The larger question, she agreed, was national in character.

Mr. Purvis said it was continuous drinking of contaminated water that brought about the trouble.

The Chairman (Col. J. Lane Notter, M.A., M.D.) mentioned that the next meeting would be held at York on October 7.

The party then adjourned to King's College for lunch, and afterwards drove to the pumping works of the University and Town Water Company and the Nine Wells, Stapleford.

[The above has been compiled from a report in the last issue of the *Cambridge Chronicle*.]

ENGINEERING SOCIETIES.

JUNIOR INSTITUTION OF ENGINEERS.—Mr. Dugald Clerk, M.Inst.C.E., the well-known gas-engine expert, has been elected President of the Junior Institution of Engineers for the ensuing session.

Books.

Lives of the Engineers. By SAMUEL SMILES. Popular edition. London: John Murray. 1904.

THE three volumes now before us of these reprints of Smiles's "Lives of the Engineers" include the lives of Boulton and Watt, with the sub-title "The Steam-engine"; those of George and Robert Stephenson, with the sub-title "The Locomotive"; and those of Metcalf and Telford, with the sub-title "History of Roads."

It would not be worth while, at this time, to review in detail a reprint series of this kind, which is moreover rather of a popular than a scientific nature. But we are glad to see these biographies re-issued in a popular edition, and it may be said that it is owing to their popular and un-scientific character that they really fill a place in the literature of engineering. Such engineering biographies as an engineer would write for engineers would not be understood or cared for by general readers; and it is desirable that the class of readers who know nothing of engineering scientifically should nevertheless have within their reach an intelligible and readable account of the great work of engineering during the last century and a half, and of the character of the men who were the most important factors in it.

The book on Watt and Boulton is perhaps the most interesting of the three volumes, as it goes back to the very beginnings of the use of steam in moving machinery; and moreover Watt is a very interesting character, in his mingling of shyness, low spirits (frequently) and weak health, with an indomitable energy and curiosity of intellect. It was in this curiosity—the desire to understand every problem that came before him, the interest he took in everything, that a great part of the secret of his success lay. The old legend of his meditation over the boiling kettle as the origin of the steam engine is indeed dismissed as apochryphal—and it is, in fact, just the sort of story that the friends or relations of a genius would be sure to recollect about him in his childhood; but on the other hand we have interesting traits of his early intelligence and intellectual restlessness, among others that of the relative, a Mrs. Campbell, with whom at the age of fourteen he was left for a week, and who ended by begging for a release—"I cannot stand the excitement he keeps me in, I am worn out for want of sleep"; for Watt would begin talking every evening and telling stories so exciting that the family could not get to rest. Watt evidently had in a strong degree the imaginative character which often belongs to a born inventor. Before settling down on the steam-engine, he had taken up and mastered many subsidiary subjects. And to this mental activity of his own he seems to have joined a nature most candid and simple, and a ready recognition of the merits of others.

It seems rather odd that Watt, having once realised the expansive power of steam to raise the piston in a condensing engine, should apparently have been so long in taking up the idea of using high-pressure steam to drive the piston both ways. He mentions it in one place, only as a possibility, long after he would have seemed to have been naturally led up to it by the very disposition of his working models. But the use of condensation for creating a vacuum had been so impressed on his mind by the systems of his predecessors, Papin and Newcomen, that it was probably difficult to emancipate the mind from it. He had actually made a model with a steam-port from the boiler, or what might have been made such, at both ends of the cylinder, long before he suggested using steam on that principle. It is curious, also, to come here on the first suggestions of great mechanical ideas destined never to be utilised till long after. Somewhere about 1770 (the precise date is not given) Boulton's partner, Small—this was before the Boulton and Watt partnership—wrote to him about an idea for driving the canal-boats by steam, in which they thought there was a prospect of success. Watt writes back—"Have you ever considered *a spiral oar* for that purpose?" Here was the direct suggestion of the screw propeller, just named to be dropped again for more than half a century.

Watt's great opportunity came from the difficulty of keeping water out of mines; when it was once found out that an engine could be had which could pump a mine clear a great deal faster and more effectually than any hitherto known means, and after one or two mines had proved its success, there came almost a competition who could secure them first. His coming across Boulton had also a great deal to do with his ultimate success, Boulton having just the business qualities that Watt lacked. Apart from the main business of developing steam-power, perhaps the two most valuable and beautiful inventions of Watt were the "parallel motion" for connecting the arc movement of the overhead beam with the mathematically precise vertical movement necessary for the piston-rod, and the governor; the latter acting today on stationary engines just as Watt invented it. Watt himself said—"Though I am not over anxious after fame, yet I am more proud of the parallel motion than of any other mechanical invention I have ever made."

The life and character of George and Robert Stephenson are more familiar, and perhaps more interesting to the general public, than that of Watt; they are newer to us, and are concerned mainly with a class of engineering work which has a practical importance for everyone who travels. The history of the immense change, too, brought over England first, and then over the world, by the introduction and development of railway travelling, has a dramatic interest almost like that of a romance.

The volume on Metcalf and Telford forms an interesting history of the development of road-making in England. It is noticeable, among other examples of anticipations of the achievements of later days, that Metcalf, the wonderfully acute and observant blind road-maker, employed, in the middle of the XVIIIth century, on a smaller scale, just the same method of getting over a bog, in making the turnpike road from Knaresborough to Harrogate, which Stephenson was to employ, eighty years later, in carrying the railway over Chat Moss. Metcalf "had a large quantity of furze and ling laid upon the bog, over which he spread layers of gravel. The plan answered effectually, and when the materials had become consolidated, it proved one of the best parts of the road."

The volumes are very well got up and well indexed; it would have been an improvement if the pages had been headed with the date of the year which is being dealt with in each portion of the history; or, if that presented a difficulty, if dates had been more frequently introduced in the text. It is sometimes necessary to turn over a good many pages before one can find out, even approximately, what year we are at.

These are excellent books for presents for boys, in which light we recommend them to the attention of parents and schoolmasters. They may serve to arouse in boys an interest in the great engineering history of their own country, of which too many people are deplorably ignorant; and they afford, happily, examples of high moral character and honourable energy on the part of those whose biographies are given, which cannot but have a healthy stimulus on the character of young readers.

How to Build or Buy a Country Cottage and Fit It Up. By "Home Counties." London: W. Heinemann. 1905.

THIS is not a book that is of any particular use to architects; it is a book of amateur fancies, intermixed with some good and some bad designs for cottages and bungalows. It is a part of the popular movement that has been got up lately on the subject of cottage building, and in connexion with which two

well-meaning landowners, who have each had a cottage of their own planning pulled down by the wicked local authorities, are held up as martyrs in the cause. We do not imagine there was need in either case for them to be actually pulled down, except as an assertion of "the arm of the law"; but we must say that the plans of the two condemned cottages, one by Mr. Wilfrid Blunt and another by Sir W. Grantham (the one is given here, and the other we have seen in another publication), are the most ridiculous specimens of naïveté in planning that we ever came across. The idea of both gentlemen, for a cheap cottage, seems to be to build a long parallelogram, divide it up by cross walls, and have an external door into each room, without screen of any kind! One wonders how either of the gentlemen would enjoy sleeping, on a windy night, in one of the bedrooms of their own planning. So far from these two cases furnishing examples of the unreasonableness of local authorities, we should say that the fact that two large landowners—men of rather exceptional educational acquirement in other respects—know no better than to plan cottages in this way, is in itself a proof of the necessity of having rural by-laws and authorities to enforce them, though the by-laws themselves no doubt need revision in some respects. We must do the writer the justice to say that in his chapter "How the Rural By-laws Work in Practice," he does not entirely run a tilt at the authorities; he even admits that the dangers of jerry-building may be greater in rural districts than in cities, since public opinion is lax or non-existent, and the persons most likely to suffer by scamped work cannot raise their voices. That is just what we ourselves remarked when what may be called "the Grantham cottage row" was first got up.

Corrugated iron and wood, we are told, make the cheapest building; we see a page or two devoted to corrugated iron, than which no more detestable material for a country district was ever invented. The American "frame-house" is infinitely preferable. Cement slab, which the author mentions with approval, is a material which has certainly claims for the cheap cottage builder. As remarked on another page, it can be rough-cast, and the author has the perception to see that the flat roof that can be made in concrete has practical advantages, which seem for the most part to be ignored by the cottage building reformer.

There are some amusing things here and there, as where a section of Mr. Blunt's bungalow is marked "End Elevation"; and in the chapter "How to Deal with Architects," we read that "in cases where a cottage is to be built, and not ordered from one of the wood and iron, whole wood, or concrete block firms, it is desirable to employ an architect *if a copy of someone else's tested plans and specifications cannot be got.*" The italics are our own. And what are "tested plans"? It reminds one of "Carter's tested seeds." "A forbidden cottage" is illustrated in front of the first chapter; "a cottage in stud and plaster, forbidden in many districts." It looks very nice in the picture. Did the author ever sleep in it during a night of hard frost?

The Principles of Planning: An Analytical Treatise for the Use of Architects and others. By PERCY L. MARKS, Architect. Second edition, revised and enlarged. London: B. T. Batsford. 1905.

It is more than four years since "The Principles of Planning" first appeared, and was reviewed in these columns; and Mr. Marks has made good use of the interval, as well as of the criticisms he has received, in enlarging and improving his book to a very considerable extent. He has almost doubled its contents, and, while retaining the general arrangement of the first edition, has amplified it in every section.

For the sake of those unacquainted with the book it may be worth while to say that it aims at serving as a complete guide to the designing—so far as the plans are concerned—of every description of building that the most "all-round" architect could possibly expect to encounter. In it may be found, arranged in alphabetical order, businesslike instructions for all the requirements of buildings for every imaginable purpose, ranging from the most simple and utilitarian—see, for example, the headings "Cattery," "Piggery," or "Poultry Run"—up to the most monumental and elaborate—as described under "Chapel, Church, and Synagogue," "Government Offices," "Palace, Royal," or "Parliament Houses." The book is liberally illustrated with plans, some of them imaginary designs of the author's own invention, but the greater part representing typical modern buildings of their respective classes. This carefully-chosen series of examples of the work of many of the most successful architects is in itself a valuable feature, while the ample "Table of Useful Memoranda Affecting the Planning of Buildings" should prove very useful, especially to the young practitioner.

It is impossible to look through such a varied collection of plans without the inclination to find fault with many points of detail; common fairness, however, to their authors causes us to remember the apology with which Mr. Marks concludes his Preface to the new edition:—"It is," he says, "a peculiarity belonging to architectural conceptions, that a plan but rarely admits of reproduction in its entirety, and *many seemingly weak points are merely the outcome of local conditions and cliential requirements*, which remove them from the plane of animadvertive criticism." The words we have italicised ought constantly to be borne in mind; readiness to condemn an architect at first sight for his arrangement of a plan is so common. How much of what is questionable or bad about his work has been forced upon the unlucky architect by outside pressure is a thing that will probably never come to light; but, in the absence of full knowledge of all the "ins and outs" of the particular case, it would be better to give him usually the benefit of the doubt when the reasons for his dispositions are obscure.

BOOKS RECEIVED.

PICTURESQUE ESSEX. By Duncan Moul and R. H. Ernest Hill, A.R.I.B.A. (F. E. Robinson & Co. 6s.)

PERSPECTIVE TABLES FOR PRACTICAL ARCHITECTURAL DRAUGHTSMEN. By Robert F. Sherar. (Edinburgh: A. W. Sinclair. 3s. 6d.)

The Student's Column.

STEAM BOILERS AND PIPES.—V.

FEED-WATER HEATING.

ASSUMING that we have a boiler designed in such a manner as to promote the perfect combustion of fuel and the transmission of heat through the plates into the water, and assuming also that the stoking and general management are in competent hands, something more may be done in the way of securing economy and efficiency by applying auxiliary apparatus calculated to increase the production of steam without additional expenditure of fuel.

This end may be attained by appliances of various types by which feed water is heated before delivery to the boiler.

It is a well-known fact that water contained in a vessel open to ordinary atmospheric pressure does not commence to give off steam until raised to the temperature of 212 deg. F. In a closed vessel such as a steam boiler the temperature of vaporisation varies with the pressure of the vapour upon the surface of the water.

Thus, if water be supplied to an open vessel at 32 deg. F., each pound must receive 180 heat units before evaporation can commence, while, on the other hand, if supplied with water at 212 deg. F., the only addition required per pound is 966 heat units—the latent heat necessary for vaporisation. In one case 1,146 heat units per pound of steam are required for vaporisation, and in the other only 966 heat units, a difference of 15·7 per cent.

Again, if water be supplied at 32 deg. F. to a boiler working at a pressure of 75 lb. per sq. in. absolute (about 60 lb. above atmospheric pressure), 1,175 heat units per pound of steam are necessary for vaporisation. But if the water be furnished at 212 deg. F., only 995 heat units are required, this quantity representing the latent heat of 897 units, plus the heat necessary for raising water at 212 deg. F. to the temperature corresponding with the pressure of 75 lb. per sq. in. In this case there is a saving of 15·3 per cent.

By further heating the feed water until its temperature equals that of steam at 75 lb. pressure, still greater economy could be secured. Only 897 heat units per pound would then be necessary for evaporation, and the difference 1,175—897 would represent a heat saving of 23·6 per cent. From the foregoing examples we see that the hotter the feed water, the greater will be the production of steam per pound of coal consumed.

It must be obvious, however, that unless the feed water can be heated without expenditure the advantage gained must be seriously discounted. Fortunately, in the products of combustion passing from the boiler to the chimney we have an ample source of heat which, although it has cost money to produce, may be looked upon as a free supply, because, unless utilised, it will simply escape up the chimney shaft.

We have already seen that the temperature of the hot gases carried up the chimney is very high, even with the most economical boilers. Assuming the average temperature to be 650 deg. F., and the temperature necessary for ensuring adequate draught to be 350 deg. F., we have a large margin available for heating feed water to be supplied to the boiler.

The apparatus employed for utilising surplus heat in this manner is generally known as a fuel economiser, which is really a tubular feed-water heater of special construction placed in the main flue between the boiler and the foot of the chimney, so that the water contained in its tubes shall be heated by the surplus heat of the escaping gases.

An economiser ought really to be looked upon as forming an essential part of any boiler plant to which it can be applied, for it continues the process of heat abstraction commenced by the boiler, and which that apparatus is unable to carry to a truly economical point. The temperature of the water in a steam boiler is necessarily uniform, except so far as it is affected by the injection of cold, or comparatively cold, feed water. On the other hand, the furnace gases are much hotter over the fire than at the tail end of a horizontal boiler. Consequently, the heating surface cannot reach a maximum value, and that at the tail end abstracts a comparatively small amount of heat, the proportion of which diminishes as the length of the boiler increases. For this reason it is more advantageous to include an economiser in a Cornish or Lancashire boiler plant than to employ a boiler of length greater than four times the diameter. The addition of an economiser permits the temperature of the waste gases to be reduced to less than that of the steam generated, an advantage that cannot possibly be secured in any boiler working alone.

In Table VII. we give some experimental results showing the heat efficiency of economisers applied to different types of steam boilers. It should be noted that the efficiency in each case represents the ratio of the heat percentage absorbed by water in the economiser to the total amount of heat evolved by the burning of fuel in the boiler furnace. The quantity of heat utilised by the economiser depends very much upon the heating surface of the tubes, as well as upon the temperatures of the gases leaving the boiler and of the water supplied to the economiser.

When worked upon the most favourable conditions, and applied to boilers that have previously been overworked, fuel economisers may effect savings up to more than 25 per cent. of the total fuel consumption. Among the causes that tend to reduce their efficiency are the use of hard water, resulting in the deposit of scale inside the tubes; neglect of the scraping apparatus, permitting soot to accumulate outside the tubes; and leakage of air through crevices and openings in the brickwork, reducing the difference of temperature between the water and the source of heat.

Given proper care and attention, the average saving to be effected by the employment of an economiser may be found from Table VIII. for different initial and final temperatures of the feed water.

It must be borne in mind, however, that,

TABLE VII.—HEAT EFFICIENCY OF FUEL ECONOMISERS.

Type of Boiler.	Dimensions.		Heating Surfaces.		Efficiencies.			Temperatures.			Authority.
	Length.	Diameter.	Boiler.	Economiser.	Boiler only.	Economiser only.	Total.	Steam.	Furnace Gases. Leaving Boiler.	Furnace Gases. Leaving Economiser.	
	ft. in.	ft. in.	sq. ft.	sq. ft.	p.c.	p.c.	p.c.	Deg. F.	Deg. F.	Deg. F.	
Cornish	26 0	5 0	457	640	73·6	4·5	78·1	336	328½	171	Kennedy
Lancashire	30 0	7 6	1,300	893	57·9	10·8	68·7	330	674	418	Bryan Donkin
,,	30 0	8 0	1,008	2,880	63·1	12·4	75·5	369	803	381	Crossland
,,	34 0	8 0	1,300	2,680	65·2	14·2	79·4	329	706	366	Bryan Donkin
,,	30 0	7 6	1,040	1,920	68·3	11·3	79·1	368	730	375	Crossland
,,	34 0	8 0	1,300	2,680	67·8	13·7	81·5	330	592	350	Bryan Donkin
,,	30 0	7 6	1,035	1,290	67·7	11·0	78·7	334	549	298	,,
,,	28 0	7 6	936	1,142	69 5	12·0	81·5	330	566	372	Donkin & Kennedy
,,	30 0	7 0	935	1,200	72·0	15·0	87·0	330	—	—	Longridge
,,	30 0	7 0	907	2,408	52·0	11 9	63·9	351	572	345	Fletcher
,,	26 0	7 0	8'8	640	57·9	11·9	69·8	306	735	409	Crossland
,,	27 0	7 0	733	685	55 6	11·2	66·8	308	705	386	Longridge
,,	26 3	7 0	717	640	56·4	10·8	67·2	305	726	412	Hiller
,,	20 6	7 0	735	640	56·2	11·0	67·0	303	671	421	Fletcher
Three Flue	30 0	8 6	1,300	960	52·0	10·0	62·0	336	636	469	Crossland
,,	30 0	8 6	1,270	1,033	54·2	7 0	61·2	335	450	395	Fletcher
,,	30 0	8 3	1,186	852	66·7	7·0	73·7	338	656	356	Longridge
Watertube (Babcock & Wilcox)	16 0	—	840	460	53·0	6 0	59·0	320	549	296	,,
,, ,, ,,	16 0	—	1,619	480	70·5	6·0	76·5	362	562	361	Crossland
,, ,, ,,	18 0	—	2,852	1,805	57·8	9·4	67·2	328	429	—	Fletcher
,, ,, ,,	—	—	840	460	59·0	8 0	67·0	320	617	297	Longridge
Watertube (De Naeyer)	—	—	470	470	62·5	11 9	74·4	328	646	329	Donkin & Kennedy

as the products of combustion contain large percentages of moisture, especially when soft coal is burned, an economiser should never be fed with water at a lower temperature than about 90 deg. F. Neglect of this point in the past has led to serious corrosion of the external surfaces of economiser pipes, and, in some cases, the metal has been rusted entirely through within three or four years.

The cold feed water is sometimes warmed before admission to the economiser by means of a small live steam heater, which, requiring supply from the boiler, involves a debit charge against the economiser. Hence, when an appliance of the kind is employed, the temperature of the feed to the economiser should be taken after the water has passed through the auxiliary heater.

Another method of warming the feed water is to run a small pipe from the hot-water outlet of the economiser to the suction side of the feed pump connected with the same apparatus, so that each stroke of the pump shall draw hot water into the cold feed and thus raise its temperature to the required degree. When this arrangement is adopted, there is no reason against taking the initial temperature of the feed water, as the heat added is furnished entirely by the economiser.

Apart from economisers, numerous patterns of feed-water heaters are available in the present day, some being intended for use with exhaust steam, and others with live steam. Strictly speaking, an exhaust steam heater forms part of the engine plant rather than of the boiler installation, because its primary object is to utilise waste steam from the engine, and if a correct account were taken of the different appliances in a power-house, it would be necessary to debit the boiler or economiser with the amount of heat received in the form of feed water from the engine-room heater.

In public institutions and various other establishments, the water warmed by means of exhaust steam can frequently be applied to laundry, domestic, and industrial purposes, more advantageously than in the boiler-house.

Except for boilers worked at very low pressures, the exhaust steam heater can only be looked upon as a preliminary heater for raising the temperature of water to be afterwards dealt with in an economiser or a live steam heater. One reason for this view is that the difference between the temperature obtainable by use of exhaust steam and that prevailing in the boiler is so marked that the resulting increase of efficiency is comparatively small.

Taking the case of a boiler operated at a working pressure of 100 lb. per sq. in., the temperature of the water is 338 deg. F., while the temperature of the water from an exhaust steam heater cannot be much above 180 deg. F., the difference being 158 deg. F. By employing a live steam heater the feed water may be raised to 280 deg. F., the difference between this and the boiler temperature being only 58 deg. F., an advantage of 100 deg. F. in favour of the live steam heater.

TABLE VIII.—SAVING OF TOTAL FUEL CONSUMPTION BY HEATING FEED WATER. (PERCENTAGE CALCULATED FOR A BOILER PRESSURE OF 100 LB. PER SQUARE INCH.)

Final Temp. of Water	Initial Temperature of Water (Degrees F.).											
Deg. F.	40	50	60	70	80	90	100	120	140	160	180	200
100	5·1	4·28	3·45	2·61	1·75	·887	·00	—	—	—	—	—
120	6·8	5·99	5·18	4·36	3·51	2·66	1·79	·00	—	—	—	—
140	8 5	7·71	6·91	6·10	5·27	4·43	3·58	1·82	·00	—	—	—
160	10·2	9·42	8·64	7·84	7·03	6·20	5·37	3·64	1·85	·00	—	—
180	11·9	11·14	10·36	9·59	8·79	7·98	7·16	5·46	3·71	1·89	·00	—
200	13·6	12·85	12·09	11·33	10·54	9·75	8·95	7·28	5·57	3·78	1 93	·00
220	15·3	14·56	13·82	13·08	12·30	11·53	10·74	9·11	7·43	5·67	3 86	1·96
240	17·0	16·28	15·55	14·82	14·06	13·30	12·53	10·93	9·29	7·56	5·79	3·93
260	18·7	17·99	17·28	16·56	15·82	15·07	14·32	12·75	11·14	9·46	7·72	5·90
280	20·4	19·71	19 00	18 31	17·58	16·85	16·11	14·57	13·00	11·35	9 65	7·87
300	22·1	21·42	20·73	20·05	19·33	18 62	17·90	16·39	14·86	13·24	11·58	9·84

OBITUARY.

M. HENNER.—M. Jean-Jacques Henner, the eminent French painter, died on the 23rd inst., after several months of very painful illness. He was born in 1829 at Bernwiller, in Alsace, the child of poor peasant folk, who made great sacrifices to fit him for an artistic career. He studied at Strasburg under Guerin and Drolling, and at Paris under Picot. He obtained the Grand Prix de Rome in 1858. His remarkable talents led subsequently to his acceptance at the Institut, where he succeeded Cabanel in 1889. He was a Grand Officier of the Legion of Honour, and in 1878 obtained the Première Medaille at the Universal Exhibition. Since 1863 Henner was one of the glories of the Salon Français, to which he was always faithful. Among his most celebrated works may be mentioned the "Adam et Eve retrouvant le Corps d'Abel," the "Suzanne" (in the Luxembourg); "Biblis changée en Source" (in the museum at Dijon); "Femme Couchée" and "St. Sebastien" (in the Luxembourg); and "L'Eglogue" (in the Petit Palais Museum). He gave long study to one subject, "Le Christ au Tombeau," which particularly interested him, and several pictures by him with this title were exhibited at different times. He has left also some admirable portraits. We may mention also "Le Lévite" and "Ephraim," which brought him the "medaille d'honneur" in the Salon of 1898; and the "Fabiola," in the collection of M. Chauchard. Henner, who retained throughout his life the homely personality that betrayed his peasant origin, was of amiable and pleasant manners, combined with a good deal of shrewdness of perception.

MR. JOHN BROWN, C.E.—Mr. John Brown, C.E., C.M.G., chief engineer of the Cape Government Railways, died in Cape Town on July 11, aged sixty years. He had his earlier training at Queenwood College, Hampshire, and as an articled pupil of the late Sir John Coode. Having been employed as assistant engineer upon the Bristol and Exeter Railway by Mr. Francis Fox, he undertook the superintendence, for Sir John Coode, of the river Bann, Ireland, navigation works. Twenty years ago he was appointed assistant engineer to the late H. I. Pauling on the Cape Government Railways.

GENERAL BUILDING NEWS.

CATHOLIC SCHOOL, BENWELL.—This structure has been erected on a site south of Benwell-lane and adjoining St. Joseph's R.C. Church. The property will be on the new road which is to run from Scotswood and be a continuation of Armstrong-road. The building has been constructed of Pelaw pressed bricks, with stone dressings, and affords accommodation for 450 children. Provision is made on the ground floor for an infants' department of 150, three rooms being set apart for this section. The older scholars will use the fourth room on the ground floor and the four rooms upstairs, which are divided by glass partitions. The roof is of pitch-pine, as is also the floor upstairs, while below there is block flooring. Exclusive of land, the scheme has incurred an expenditure of 4,500*l*. The work has been carried out by Mr. John Cooper Hope, contractor, Newcastle, from designs prepared by Mr. Charles Walker, also of Newcastle.

WESLEYAN CHURCH, WESTOE.—The foundation-stones of a new temporary Wesleyan church were laid in Dean-road, Westoe, South Shields, recently. The temporary building, which provides sitting accommodation for about 300 worshippers, is to cost about 600*l*. The premises, which are to be fitted with electric light, are being built by Messrs. W. J. Robertson & Sons, the architect being Mr. J. H. Morton. The completed scheme, consisting of a permanent church, a Sunday school, and various class-rooms and vestries, is to cost over 6,000*l*., exclusive of the site.

NEW LIBRARY, KENSINGTON.—A new Central Library for Kensington is to be erected, from the designs of Mr. Maurice B. Adams, on the site of the old Vestry Hall, which since the erection of Kensington Town Hall has been utilised as a public library, for which purpose, however, it was both unsuitable in plan and inadequate in space. The site will now be treated so as to afford much more accommodation, at an estimated cost of 18,000*l*.

CHATHAM NEW NAVAL HOSPITAL.—This hospital has just been opened by the King. The buildings were started in June, 1899. The site comprises 33½ acres of ground on the top of Chatham Hill, and the accommodation of the building is for 600 beds, staff and attendants ninety. The whole is laid out in the pavilion style, joined by a connecting corridor running the entire length east and west, nearly 1,000 ft. long, from which branch off the wards, lettered A, B, C, D, E, F from east to west. The building has four towers with stone domes, and in the centre a copper-covered dome. The interior of hall is vaulted in Doulting stone resting upon four arches and an arcade with stone arches, caps, and bases, while the piers are in salt glazed bricks, and from the central hall the corridors branch east and west to the inspector-general's

office, surgeons' and medical staff, receiving, bath, and Röntgen-ray rooms, etc. On the west side are the board rooms, etc. This block is complete with sanitary annexes and lavatories. The whole of these walls together with the medical side of wards are in Keen's cement and painted green. The surgical side of the wards is finished in a rose tint. Above the entrance hall and under the dome are the laboratory, pathological museum, library, and research rooms. These rooms are fitted with chemical benches, with opalite to the spaces between the sinks, and cupboards and presses, etc., in polished teak. At the junction of the central hall with the main corridor is the clock tower, 90 ft. high, with a bell weighing 1 ton. At the rear of this tower on the north side are the kitchen and domestic offices, sculleries, and stores. The kitchen has a white glazed brick dado, and is fitted with steam cookery apparatus, sterilisers, tea infusers, and boilers by Messrs. Wenham & Waters, of Croydon. The services for cold water are by Messrs. Bevan & Co., of Gloucester and London, who have done the whole of the plumbing throughout the hospital. Beyond this, going north, are the laundry buildings and boiler house, and at the north-west angle of the site is the infectious block, a hospital complete in itself, with its own surgeons and staff, and enclosed within a neutral zone. The clock tower is in the centre of the long connecting corridor, which runs through all the pavilion blocks and close to the lifts in the well of the principal staircases. On the south side of this corridor on either side of the clock tower are the day and dining-rooms and reading-room. On the south end of pavilion C are the operating theatre, recovery, anæsthetic, and surgeons' rooms. There are fourteen general wards opening to left and right of the main corridor. The majority of these wards in the main buildings are for twenty-eight beds and are 120 ft. long, 28 ft. 6 in. wide, by 15 ft. in the clear. The floors are 1¼ in. teak with patent secret joints and teak curvetto skirtings at angles of floors and walls, the whole being polished with Ronuk polish. The heating is by two large pedestal stoves in the centre of wards, and the general temperature is regulated by steam radiators in the window backs on the low-pressure system. Fresh air is passed over these and admitted as fresh warm air into the rooms. The vitiated air is removed by a series of fresh air inlets and also extract flues, which are connected with a series of iron ducts to a flèche in the centre of each roof. Each ward has a sister's duty-room, and a ward kitchen and bathroom with fixed and moveable baths fitted with hot water towel rails. The floors of all bathrooms and corridors are in terrazzo, laid by Messrs. Wilkinson & Co. The walls of the sanitary annexes are in white glazed brickwork and the joints painted with white enamel. The angle towers which flank each building are fitted with brush and sink rooms on one side, and on the other with lavatories and closets. The south half of pavilion B is fitted up with separate rooms for officers and warrant officers. There is a Portland stone staircase to each pavilion block, and in the well of stairs is fitted an electric passenger and ambulance lift. In the lunacy ward, which is on the north side of F block, the pedestal stoves are protected by strong iron screens and secured with padlocks, while all the windows have iron guard bars. In the boiler house there are five Lancashire boilers, 24 ft. long by 7 ft. diameter, and worked at a pressure of 60 lb. per square inch, for the steam heating, cooking, and laundry. The laundry and washouses were fitted by Messrs. Manlove & Alliott, of Nottingham and London. Attached to the hospital round the carriage drives are the residences of the principal medical officers, staff surgeons, fleet surgeons, sisters, storekeeper, chaplain, and matron. Near the main entrance is the sick-berth attendants' quarters, fitted with dining and recreation rooms, cubicles and dormitories for petty officers, and hammocks for ordinary seamen. These buildings are very compact with pitch pine floors. The whole of the walls are treated with distemper, and the heating is by low-pressure hot-water system. The heating arrangements have been carried out by Messrs. Strode & Co., Regent's Park. The whole of the locks, brassfoundry, and opening gear, both in gunmetal and iron, were manufactured by Mr. James Gibbons (Wolverhampton). The current for lighting is supplied by the Gullingham Corporation on contract, but it is understood that in the near future the hospital will generate its own current. The contractors are Messrs. Perry & Co., of Bow; Mr. C. J. Murray is the architect, and Sir H. Pilkington the engineer-in-chief. Mr. S. P. Brinson was general superintendent, and Mr. T. Simpson the clerk of works.

GUY'S HOSPITAL.—The new Gordon Museum of Anatomy and Pathology has just been opened. The building has been erected from plans and designs by Mr. J. H. T. Woodd, architect to the governors of the hospital. It forms part of an extensive scheme of medical school buildings for purposes of study and instruction. The specimens, some 12,000 in number, are arranged in the four bays of the museum, each bay being top-lighted and having 1,000 sq. ft. of floor-space for models and exemplars, with two tiers of galleries, gained by a central staircase, affording wall-space of more than 13,500 ft. superficial for specimens on shelves and in cases.

TOWN HALL, DEPTFORD.—The new Town Hall in New Cross-road, Deptford, was formally opened on Wednesday last week by the Mayor, Mr. J. Arthur Pyne. Mr. Lanchester, of Messrs. Lanchester & Rickards, architects for the building, presented the Mayor with a silver-gilt key, bearing the borough arms and a commemorative inscription. The new Town Hall has on the front a frieze representing a naval battle, and large figures of admirals. The total cost of the site, building, and fittings will be between 40,000*l.* and 50,000*l.*

FREE LIBRARY, HAMMERSMITH.—The Duke of Argyll visited Hammersmith on the 24th inst. for the purpose of opening the new library which has been erected in Brook Green-road at a total cost of 14,500*l.* Mr. Carnegie contributed to that amount a sum of 10,000*l.* on the condition that the cost of a site should not be a burden on the penny library rate. The architect was Mr. H. T. Hare.

APPOINTMENTS.

CORPORATION OF WESTERN EGYPT.—The directors have appointed as general manager in Egypt Mr. W. C. Beckett, who, in order to take up the post, has resigned his position as chief engineer of the Bengal-Nagpur Railway. They have also appointed as manager in the Oases, and geological expert, Mr. H. J. Beadnell, of the Geological Survey, Egyptian Government, and representative of the Egyptian Government in the Oases during several years past.

ORDNANCE SURVEY.—The War Office have appointed Colonel R. C. Hellard, R.E., as Director-General of the Ordnance Survey at Southampton in succession to Colonel D. A. Johnston, C.B., R.E., retired.

FOREIGN.

FRANCE.—The Académie des Beaux-Arts proceeded on Saturday last to the election of two members in place of the late MM. Paul Dubois and Alphonse de Rothschild. The result was that M. René de Saint-Marceaux, the sculptor, was elected in place of M. Dubois, by 19 out of 37 votes; and Dr. Paul Richer, in place of M. de Rothschild, by 22 votes out of 42. M. Saint-Marceaux, a former pupil of Geoffroy, was born in 1849. Among his principal works are "La Jeunesse du Dante" (in the Luxembourg), "Le Forgeron Florentin," "Le Génie gardant le Sécret de la Tombe," "Arlequin," the tomb of Alexander Dumas *fils*, and lastly the monument to be raised to the same writer in the Place Malesherbes. Dr. Richer is professor of anatomy at the Ecole des Beaux-Arts, and is also a talented sculptor and draughtsman.——Last Sunday, at St. Malo, the statue of Jacques Cartier, the discoverer of Canada, was unveiled on the ramparts opposite the tomb of Chateaubriand. The statue is the work of M. Georges Barreau.——A competition has been opened for designs by local district architects for a new hospital at Perpignan. The cost is estimated at 1,400,000 francs.——The Société d'Horticulture du Rhône has opened a competition for the best floral decoration of windows and balconies in the city of Lyons.——M. Fernoux, President of the Société Nationale des Architectes de France, has been created a Chevalier of the Legion of Honour.——The Municipality of St. Germain-en-Laye will shortly open a competition for the rebuilding of the City Theatre.——The jury of the competition opened by the town of Nitry-le-François for a new savings bank, has awarded the first premium to M. Jossier, of Chalons-sur-Marne.

SOUTH AFRICA.—At a recent meeting of the East London Town Council eleven building plans were approved, the total approximate value of the proposed buildings being 10,560*l.* The same municipality also invite tenders for the erection of a Fire Brigade Station, the architects for which are Messrs. Cordeaux & Walker.—— The Pretoria Town Council have passed building plans to the value of 45,030*l.* These include shops and offices to be erected in Church-street for Mr. J. G. van Boeschoten, valued at 21,000*l.* ——In Johannesburg the building trade is still brisk, and it is reported that there is a good demand for steel ceilings, which are being placed in the old buildings when these are renovated. The local Town Council invite tenders for certain buildings to be erected in Smit-street, in connexion with the local water distribution, and also for the construction of a dam at Klipspruit.—— At Kroonstad, the Town Council met to consider the tenders sent in for the erection of a local town hall, and that of Mr. G. B. White, of Port Elizabeth, the lowest, for 9,540*l.*, was accepted.

EAST AFRICA.—The new Cathedral at Mombasa was recently inaugurated with much ceremony. The first set of plans were by Messrs. Christian & Purday, architects, of London, but had to be set aside as involving too costly an edifice. According to the local *African Standard*, Mr. John H. Sinclair, Acting Consul-General in Zanzibar, "most kindly undertook to alter them." The cost of the Cathedral, when completed, will be about 56,000 rupees.

MISCELLANEOUS.

NEW STANDARD WEIGHTS.—In response to representations made to the Board of Trade by the Association of Chambers of Commerce, the Board have signified their consent, and they will take steps for the preparation of three new denominations of standard weights—20½ lb., 10 lb., and 5 lb.—as aliquot parts of the "cental" and being multiples, respectively, of the imperial weight of 1 lb. ascertained by the Weights and Measures Act, 1878. The new weights will be legalised by an Order in Council in due course; the three standards will be fashioned in the octagonal shape, with a cross-bar, of the standard 50 lb. avoirdupois or "half-cental" weight of which we published an illustration on October 31, 1903, as then sanctioned and prescribed by Order in Council. The Associated Chambers have expressed their opinion that the adoption of the authorised "half-cental" has served to economise labour, time, and expense.

SOUTH BENFLEET BRICKFIELDS.—At the Mart, Tokenhouse-yard, on July 19, Messrs. Foster & Cranfield submitted for sale by auction the freehold property known as South Benfleet Brickfields, situate close to Benfleet Station on the London, Tilbury, and Southend Railway, and having direct water carriage to Benfleet Creek. According to the particulars, the area covers 34 a. 0 r. 26 p., divided in this way:—Pasture, 11 a. 0 r. 12 p.; pasture and ponds, 1 a. 1 r. 30 p.; and buildings, yard, pastures, etc. 34 a. 0 r. 26 p. It was stated that the entire property is at present let to and in the occupation of Mr. N. Stockwell under a five years' agreement from March 1898, subject to six months' notice to determine the tenancy, at a rental of 20*l.* per annum and a royalty of 2s. per 1,000 bricks made, less 10 per cent. for waste, and 1s. per yard for sand sold off the property. The ground was represented as well adapted for brick-making purposes, the contour of the land being such that the greater part of the deposit of brick earth stands well above the level of the land surrounding, so that an extensive business could be done without any detriment to the site. At present, with the exception of the portion now used for brick-making, the land was all grass. On the property were brick-built and tiled engine-house, square shaft, and office; corrugated iron-built pump-house; and, conveniently placed, a foreman's bungalow cottage; a piece of garden ground, a stable, and a coach-house. There was a good supply of sand, the brick earth was practically inexhaustible, and there was an ample water supply from two ponds. Bidding commenced at 1,500*l.* and went up to 1,800*l.*, but, there being no further advance, the property was bought in at 3,000*l.*, the auctioneers intimating that they would be ready to treat for a sale privately.

MEMORIAL TO CHARLOTTE YONGE, WINCHESTER CATHEDRAL.—The second part of the memorial to Miss Charlotte Yonge, the first part of which was unveiled in Otterbourne Church about a year ago, was recently dedicated by the Bishop of Guildford in Winchester Cathedral. It takes the form of a reredos, and has been placed in the Lady Chapel, its subject being the Annunciation. The reredos, which is of oak and mahogany, painted and gilded, was, like the screen in Otterbourne Church, designed by Mr. J. A. Kempe.

ASPINALL'S ENAMEL.—The patentees and makers of "Aspinall's Enamel" have just succeeded in an action taken against a Belgian firm who were selling goods labelled "Email Aspinall," "Peinture Aspinall," and "Vernis Aspinall." The court awarded the English firm substantial damages, and ordered that all the goods bearing the words "Aspinall" were to be withdrawn from the market.

INCORPORATED CHURCH-BUILDING SOCIETY.—This Society held its usual monthly meeting on Thursday, the 20th inst., at the Society's House, the Rev. Canon C. F. Norman in the chair. Grants of money were made in aid of the following objects, viz.—Building new churches at Bournbrook, S. Wulstan, near Birmingham, 250*l.*; Crofton-park, S. Hilda, Kent, 175*l.* for the first portion; Jarvis Brook, S. John, near Rotherfield, Sussex, 80*l.*; Southfields, S. Barnabas, Surrey, 250*l.*; and West Acton, S. Martin, Middlesex, 130*l.*; towards rebuilding the church of S. Andrew, Countesthorpe, near Leicester, 50*l.*; and towards enlarging or otherwise improving the accommodation in the churches at Chadshunt, All Saints, near Warwick, 30*l.*; Chobham, Holy Trinity, Surrey, 10*l.*; Enfield, S. Luke, Middlesex, 100*l.*, making in all 300*l.*; Llanelly, S. Elli, Carmarthen, 200*l.*; Llanfihangel Rhos-y-corn, S. Michael, Carmarthen, 20*l.*; Mortlake, S. Mary, Surrey, 150*l.*; Notting-hill, S. Clement, Middlesex, 20*l.*; Southend-on-Sea, S. John-the-Baptist, Essex, 50*l.*, and Lynton, S. Mary, Devon, 45*l.* in lieu of a former grant of 30*l.* A grant was also made from the Special Mission Buildings Fund towards building a Mission Church at Hellifield, S. Aidan, near Long Preston, Yorks, 50*l.* The following grants were also paid for works completed:—Chepstow, S. Mary, Mon., 25*l.*, making in all 75*l.*, Sutton Montis, Holy Trinity, Somerset, 15*l.*; Llandrindod Wells, Holy Trinity, 150*l.*; Broughton Moor, S. Columba,

Cumberland, 90*l.*; Hornsey, S. Peter, Middlesex, 50*l.*, making in all 175*l.*; Barry Dock, S. Mary, Glam., 200*l.*; Chesterton, S. Andrew, near Cambridge, 15*l.*; and Watford, S. Michael and All Angels, Herts, 40*l.* In addition to this the sum of 315*l.* was paid towards the repairs of seventeen churches from Trust Funds held by the Society.

LONDON BUILDING ACTS (AMENDMENT) BILL.—At the meeting of Marylebone Borough Council, on the 20th inst., the report of the Joint Sub-committee of the General Purposes and the Works Committee appointed to consider the London County Council's proposed amendments of the London Building Acts was presented. The report formulated a great number of objections to various clauses in the Bill, which we have not space to give. It was adopted, and it was resolved to send it to the London County Council.

WAYSIDE REST, NEAR BRANSCOMBE.—At a spot situated about five miles from Colyton, and three from Branscombe, a massive semicircular seat of grey Dartmoor granite has been erected as a memorial to the late Dr. Gilbart-Smith. In the back of the seat has been introduced a medallion portrait, in bronze, of the doctor, whilst on each side are panels of the same material bearing inscriptions in raised letters. The work was designed by Mr. T. Phillips Figgis, of London, and the structure has been erected under the general official supervision of Mr. S. Ingram, C.E., the surveyor to the Devon County Council, by Messrs. Harry Hems & Sons, Exeter.

UNIVERSITY DEGREE CONFERRED UPON SIR THOMAS DREW.—In presenting Sir Thomas Drew to the Senate of Dublin University for the honorary degree of Doctor of Laws the Public Orator, Mr. Purser, began his address in the following terms:—"Maximi apud Romanos habiti sunt architecti, Vitruviique fama cum libris doctissimis ad posteros per sæcula pervenit. Neque minus nos honorare architectos decet, et nunc Vitruvium nostrum Dublinensem ad vos duco Thomam Drew Equitem Auratum, qui Academiæ Artium Regalis Hibernicæ Præses picturam, statuariam, architecturam insulæ nostræ summo iudicio gubernat, stimulat, promovet. Ecclesias Cathedrales Dublini, Ardmachæ, Belfastii vel reficiendi vel ædificandi magna pars fuit. Nos quoque ipsi ingenio eius multa debemus; ædificium enim nuper Collegio donatum alumnorum nostrorum liberalitate, iam perfectum et expolitum scientiæ eius monumentum exstat perenne quam utiles, quam spatiosæ, quam pulchræ sint ædes ab eo exstructæ. . . ."

UNION OF BENEFICES, WESTMINSTER.—The Commissioners appointed by the Bishop of London to inquire into the possible rearrangement of the nine Westminster parishes have just finished their labours. The Commissioners direct attention in their report to the great changes, with a concurrent diminution of the resident population, which have been caused by the demolition of houses and the erection of business and public buildings during recent years. They recommend that a union be effected of the benefices of the parishes of St. Mary and St. Stephen, together with the sale of St. Mary's Church (which was built in Tothill Fields in 1837) and of one of the two parsonage houses, and that St. Stephen's Church, the Napier Hall, and St. Mary's Schools be retained for the two united parishes. The population of St. Stephen's parish has dwindled to less than 2,000; it was nearly four times as much when Baroness Burdett-Coutts established and built the church in Rochester-row in 1846-7, after B. Ferrey's plans and designs.

"THE HANDY NEWSPAPER LIST."—Messrs. Charles & Edwin Layton, of Farringdon-street, have issued a useful and well-arranged little newspaper list at the low price of 6d. All the towns in the United Kingdom in which newspapers and periodicals are published are arranged in alphabetical order with the exception of London, which is placed first in the list. The names of the daily newspapers in each town are placed at the head of the list in larger type, to distinguish them from the other periodicals.

THE SURVEYORS' INSTITUTION.—The Council of the Surveyors' Institution have decided to offer annually the following scholarships, tenable for three years by students of the Institution, viz., one of 80*l.* per annum at Cambridge University; one of 50*l.* at the University College of North Wales, Bangor; and one of 50*l.* at the Armstrong College, Newcastle-on-Tyne. Holders will be required to take the Natural Science Tripos, and the examinations for the diploma in Agriculture at Cambridge, or the equivalent for those examinations at the other universities. The first examinations will be held at Cambridge, Bangor, and Newcastle-on-Tyne respectively during the summer of 1906. For further particulars application can be made to the Secretary, Department of Agriculture, Cambridge University; the Secretary, University College of North Wales, Bangor; the Secretary, Armstrong College, Newcastle-on-Tyne; or the Secretary, the Surveyors' Institution, 12, Great George-street, London.

GOODYEAR EXHIBITION, EDINBURGH.—Owing to the lack of time, and the difficulty in getting the exhibits to this country by a given date, the opening of the Goodyear Exhibition of Architectural Refinements at Edinburgh will not, as previously announced, take place in August, but has been postponed until September 5, 1905. The exhibition will be held in the National Portrait Gallery, Queen-street, Edinburgh. Those who are interested in the subject, and may wish to be present at the opening, are invited to send their names in to the Hon. Exhibition Secretary, Mr. L. Ingleby Wood, Edinburgh Architectural Association, 117, George-street.

ROYAL SANITARY INSTITUTE.—At an examination in Sanitary Science as applied to Buildings and Public Works, held in Cardiff on July 21 and 22, seven candidates presented themselves, and the following two candidates were granted certificates:—C. T. Russell, Clissold Park; D. T. Williams, Cardiff.

KING'S COLLEGE, LONDON.—The following is the list of prize-winners for 1904-5. Faculty of Arts.—Division of Architecture (day school):—Studio; first year, J. Moodie, prize of books; second year, W. Hoyle, silver medal. Ornament; first division, H. N. Smith, certificate of distinction. Building Construction; first year, first division, J. Moodie, prize of books. Division of Architecture (evening):—Architectural History: W. Harrington, first prize; L. E. Williams, second prize. Studio (first division); W. J. Burton, prize. Constructional Drawing (advanced); James Perkins, silver medal; H. A. French, 3*l.* in books; W. R. Hock, 2*l.* in books; W. T. H. Woolcock, 1*l.* in books. Quantities; W. T. H. Woolcock, 3*l.* in books; F. C. Higgins, 2*l.* in books; Alfred J. Pyle, 1*l.* in books. Building Construction; A. G. Older, silver medal; W. T. H. Woolcock, bronze medal; Miss J. Lee, 3*l.* in books; T. W. S. Hall, 2*l.* in books. Sir G. Faudel Phillips' bronze medal for sanitary building construction; F. C. Higgins.

Legal.

BETHNAL GREEN ANCIENT LIGHT CASE.

THE case of Price *v.* Davis came before the Court of Appeal, consisting of the Master of the Rolls and Lords Justices Romer and Mathew, on the 20th inst., on the application of the defendant for judgment or new trial on appeal from verdict and judgment at trial before Mr. Justice Walton and a common jury in the King's Bench Division.

Mr. Quicke appeared for the appellant, and Mr. Witt, K.C., and Mr. Woodfin for the respondent.

When the case was called on, Mr. Quicke said that the learned counsel who conducted the case in the Court below was engaged on a reference, and he asked that the appeal might in these circumstances be put at the bottom of that day's list.

Mr. Witt objected to this. He said that the case had been in the paper for two or three days, and he asked that it might be proceeded with.

The Master of the Rolls said that the appeal must go on or it would be dismissed on the ground that no one was instructed to prosecute it.

Mr. Quicke replied that the brief had only that minute been placed in his hands to make the application for the appeal to stand over for a short time. He said he saw from the pleadings that the plaintiff was the tenant of a fully-licensed public-house known as the "Bricklayers' Arms," Bethnal Green, and he sued the defendant, a builder, for damages caused by buildings he had recently erected in Somerford-street, which the plaintiff alleged had interfered with and diminished the light that he formerly enjoyed in the bar parlour. He submitted that on the decision of the House of Lords in the Colls' case there had been no such interference with the plaintiff's ancient lights as gave him a right to damages. He contended that the character of the trade usually carried on in a bar-parlour did not give the occupier of such premises any claim to a special amount of light, and so long as the new buildings did not reduce the light that reached the room below that amount ordinarily enjoyed in a town the plaintiff could not complain. Indeed, the defendant was so positive that no real damage was done to the licensed premises that he had asked that the jury should be allowed to view the premises, undertaking to bear the expense himself of their going down to see for themselves.

Lord Justice Mathew asked if it was not a question for the jury who had heard the evidence. He supposed that evidence had been called on both sides.

Mr. Quicke said that no doubt expert evidence had been called.

The Master of the Rolls read the judge's notes of the trial, from which it appeared that the "Bricklayers' Arms" stood at the junction of Somerford-street and Collingwood-street, and that the light to the bar parlour came in obliquely. The new buildings in Somerford-street were some 20 ft. higher than the buildings that had been pulled down. The evidence given by the plaintiff was that he had now to use artificial light earlier in the day in the bar-parlour, and that the room, which was formerly bright and cheerful in the day-time, was now a dull room. Owing to that the trade had fallen off to the extent of about 30s. a day.

Lord Justice Romer said it was a clear case for the jury, and they had decided it.

Mr. Quicke submitted that there was not sufficient evidence of diminution of light to justify that finding.

Lord Justice Romer—There is enough to justify a verdict to the effect if the jury so found.

Mr. Quicke then submitted that the damages given were excessive.

Lord Justice Romer—50*l.*, good gracious!

Mr. Quicke said that that was the appellant's case.

The Master of the Rolls, without calling upon Counsel for the respondent, said that Mr. Quicke had done the very best for his client in the circumstances and on the materials before him. It was obviously not a case in which the findings of the jury could be interfered with by the Court. The jury had returned a verdict, and on that verdict the learned judge was right in directing judgment to be entered for the plaintiff. That ended the matter.

The Lords Justices concurred, and the appeal was accordingly dismissed with costs.

Mr. Witt said that the damages had been paid into Court as a condition to the appeal being brought. He asked that the money should be paid out to the plaintiff.

The Master of the Rolls—Yes, certainly.

Order accordingly.

POINT UNDER THE PUBLIC HEALTH (LONDON) ACT, 1891.

APPEAL BY THE WESTMINSTER CORPORATION.

IN the House of Lords, consisting of the Lord Chancellor, and Lords Macnaghten, James of Hereford, and Lindley, on the 24th inst., judgment was delivered in the case of the Mayor, etc., of the City of Westminster *v.* the London and North-Western Railway Company on the appeal of the Corporation from an order of the Court of Appeal discharging a judgment of Mr. Justice Joyce in the Chancery Division.

The short facts of the case were as follows:—The appellants, as the sanitary authority of the City of Westminster, had constructed at the southern end of Parliament-street (where, in consequence of recent improvements, there was a distance of about 100 ft. between the opposite buildings) public lavatories and other conveniences, these conveniences being placed under the ground in the middle of the street, as far removed as possible from the buildings on either side. On each side of the roadway there is an entrance 5 ft. 9 in. wide protected by railings, and leading by a staircase of the same width to a passage or subway 10 ft. wide and 8 ft. high, which ran the whole way across on a level with the underground conveniences. Out of the subway there were openings where the lavatories and cloakrooms were provided on a large scale. The London and North-Western Railway Company owned a large block of buildings on the east side of Parliament-street, having a frontage to Parliament-street and a frontage to Bridge-street, with vaults under the pavement in Parliament-street, and they claimed the soil beneath the roadway up to the mid line of the street. The railway company objected to the sanitary works constructed by the Corporation, and sought to have them removed, alleging alternatively that the Corporation had committed a trespass or had been guilty of obstruction to the highway, causing special damage. The Corporation relied on their statutory powers under the Public Health (London) Act, 1891, which authorised them to construct such public conveniences and vests in them for the purpose the subsoil of the road exclusive of the footway. Mr. Justice Joyce, before whom the case was tried, ordered the Corporation to remove such part of the staircase railings and other works as had been placed on the site of the old footway, within 2 ft. 9 in. from the kerb defining the present footway. The Company, however, appealed, and the Court of Appeal ordered the Corporation to pull down and remove the whole of the staircase railings and other works upon the lands of the Company other than the conveniences in the pleadings mentioned and such further portion of the construction as the Court might sanction, the order being suspended pending an appeal to the House of Lords, and the Corporation were ordered to pay the costs of the action and of the appeal. The Corporation acquiesced in the order of Mr. Justice Joyce, but they contended that the order of the Court of Appeal was wrong.

The Lord Chancellor, in giving judgment, said that it seemed to him that the power of the local authority to erect certain public conveniences could not be disputed. The shape, site, and extent of them were left to the discretion of the authority in question, and so far as the things themselves, which under their discretion had been erected, he did not understand that any objection could be made. The objections, so far as they assumed the force of legal objections,

referred to the access to them and to the supposed motives of the local authority in the selection of the site. Assuming the thing done to be within the discretion of the local authority, no Court had power to interfere with the mode in which it had exercised it. It seemed to him impossible to contend that these conveniences were not the things authorised by the Legislature. It seemed to him that the provision of the Statute itself contemplated that such conveniences should be made beneath public roads; and if beneath public roads some access beneath the road level must be provided; and if some access must be provided, it must be a measure simply of greater or less convenience, when the street was a wide one, whether an access should be provided at only one or at both sides of the street. Under these circumstances he thought it was a question of degree, and if there was the express provision, as he thought there was, to make a tunnel under the street for the purposes of these conveniences, then he thought the mention of its extent or cost was a matter with which neither a Court of law nor equity had any concern, since the thing contemplated by the statute had been done and done in the way the statute contemplated it might be done. He thought the judgment of Mr. Justice Joyce should be restored. Having regard to the fact that the local authority had made a blunder, and interfered with the footway, although that had now been put right, he thought neither side in the controversy should have any costs.

Lords Macnaghten and Lindley concurred in the motion of the Lord Chancellor that the appeal should be allowed.

Lord James of Hereford dissented, being of opinion that the works, so far as they constituted the subway, were constructed without legal authority. He thought, therefore, that the judgment of the Court of Appeal should be affirmed and the appeal dismissed.

By a majority, therefore, the appeal was accordingly allowed.

Mr. Haldane, K.C., Mr. Hughes, K.C., and Mr. Dighton Pollock, appeared for the appellants; and Mr. Montague Shearman, K.C., and Mr. Eustace Hills for the respondents.

ACTION BY BUILDERS' MERCHANTS.

MR. JUSTICE KEKEWICH, in the Chancery Division on the 25th inst., heard the case of Hooper & Ashby *v.* Willis, an action by the plaintiffs, a firm of builders' merchants, carrying on business at Southampton, with branch offices at Bournemouth, Poole, Portsmouth, and other places, for an injunction to restrain the defendant from carrying on such business at Broadstone in alleged breach of an agreement of service. The facts were these:—The defendant entered the service of the plaintiffs in September, 1896, when he was aged nineteen. The plaintiffs, by an agreement of service dated September 29, 1896, agreed to take the defendant into their employment, and in that agreement it was provided that defendant should not for the space of fourteen years after the termination of his employment with the plaintiffs, whether the employment should be terminated by the plaintiffs or the defendant, at any place within a radius of thirty miles from the Town Hall at Bournemouth or the Bargate at Southampton, carry on directly or indirectly as principal clerk, agent, manager, or traveller, or in any other capacity, the business of a builders' merchant or manufacturer of or a dealer in cement, lime, bricks, plaster, laths, whiting, and any other building materials which at any time during his employment should be manufactured by or dealt in or sold on commission by the plaintiffs. The agreement was executed by the defendant, but not by any member of the plaintiff firm. The defendant was employed first as a clerk and afterwards as a traveller at the palintiffs' Bournemouth office, but discharged himself from their employment in August, 1903. The plaintiffs subsequently discovered that the defendant was carrying on business at Broadstone, which was within seven miles of Bournemouth, and accordingly brought the present action, claiming the before-mentioned relief.

In the result his lordship, after hearing evidence, came to the conclusion that the area covered by the agreement was larger than was reasonably required for the protection of the plaintiffs' trade, and dismissed the action with costs.

Mr. Stewart Smith, K.C., and Mr. Mark Romer appeared for the plaintiffs, and Mr. P. Ogden Laurence, K.C., and Mr. Hohler for the defendant.

REMOVAL OF SHINGLE FROM A FORE-SHORE.

THE case in which a workman in the employ of the Shanklin Urban District Council, named Robert Spencer, has been summoned for a breach of the new Prohibitive Order by the Board of Trade with regard to the removal of shingle from the shores of the Isle of Wight, was again mentioned at this week's sitting of the Isle of Wight county magistrates, when Mr. John Marsh, on behalf of the Council, asked for a further adjournment of the case, saying it was the wish of the Board of Trade that there should be another adjournment. Asked by the Chairman (Admiral Sir Algernon de Horsey) the object of the repeated adjournments, Mr. Marsh said probably the Bench would hear no more of the matter. Under a section of the Act the rights of certain owners of the shore were preserved, and it was, he believed, contended on behalf of the Board of Trade that their order had the effect of overruling those rights. The Shanklin District Council were the lessees for Mrs. White-Popham, who was admittedly the owner of the foreshore and the shore down to low-water mark at Shanklin. Under their lease they had certain rights to take materials on the shore, which they had done for use in repairing the sea defence works, and application was made to the Board of Trade to allow them to continue their operations without any question as to the validity or force of the Order. During the time the matter was under consideration the proceedings in that case were commenced without reference to or knowledge of the Board of Trade. No material had since been removed. The effect of the works carried out by the Council in erecting a groyne was that there had never before been such a good beach as now. The Clerk informed the Bench that he thought it advisable to grant the application for the adjournment, as it would probably save a very serious law suit to test the validity of the Order of the Board of Trade. The application for a further adjournment was then granted.

AN ARCHITECT'S CLAIM.

AT the Moot Hall, Newcastle, on the 20th inst., the case was resumed before the Official Referee (Mr. Edward Pollock) of Haswell *v.* Mulholland, which was a claim by Mr. F. R. N. Haswell, architect, of North Shields, for 274*l.* 3s. 5d. against Mr. John Mulholland, Station Hotel, Whitley Bay. The claim was made up of 270*l.* 13s. 5d. fees for work done, and 3*l.* 10s. expended by plaintiff as an architect. The defendant counterclaimed for 295*l.* for alleged inferior work passed by the architect, for 200*l.* for law costs incurred owing to right of light of a neighbour, and 35*l.* costs of defending an action brought by the builder. The plaintiff was represented by Mr. C. F. Lowenthal (instructed by Messrs. R. and R. F. Kidd), and the defendant by Mr. J. A. Compston (instructed by Mr. W. J. Ward).

The claim arose out of work in connexion with some premises owned by defendant at Whitley Bay, which in March, 1901, had an off wine and spirit licence, and for which defendant wanted a full licence. To get this, it was stated by plaintiff's counsel on the opening day, defendant consulted Mr. Haswell, who advised him to build something in the nature of an hotel. The project was proceeded with, and, after various sets of plans had been prepared by Mr. Haswell, defendant bought out Miss Cansick's (a neighbour) right of light, and erected a four story building. The question of the right of light was a much debated part of the case, and plaintiff in his evidence averred that he knew nothing about the dates of Miss Cansick's building, nor of her right to light. As to his charges, he said that at the first interview with defendant he stated that the leading point was 5 per cent. upon the outlay of the contract; but it was not true to say that he agreed to do all the work dealt with for 5 per cent.

The suit came to an abrupt termination. Counsel discussed and settled various items in the particulars of claim, agreement on some matters in dispute having been come to. By this means the case was considerably shortened.

Thereupon the Official Referee gave judgment. He said that he saw no justification whatever for charging Mr. Haswell with any negligence either with regard to carrying out the building or Miss Cansick's right of light or anything else. He thought that if the matter was going to be settled in the way in which it had been by its withdrawal it was a charge that should not have been made. He could not see that there was any ground whatever for interfering with the ordinary course with regard to the costs on this occasion, and there must be judgment for the plaintiff in the sum of 244*l.* 6s. 6d., with judgment for the plaintiff on the counterclaim, and with costs on the claim and counterclaim.—*Newcastle Daily Chronicle.*

PATENTS OF THE WEEK.

APPLICATIONS PUBLISHED.*

14,787 of 1904.—H. COULTHURST, J. COULTHURST, and A. COULTHURST: *Earthenware and like Pipes.*

According to the invention, an ordinary form of pipe press is employed, operated either by steam or screw power in the usual manner. The die for forming the exterior of the pipe is supported from guide arms as usual, and is made in two halves, so that it can be removed when the pipe is made, the two halves being held in position by means of clips during the pressing operation. The upper portion of the die is shaped internally to give the required formation to the spigot end of the pipe, the middle portion of the die is contracted to form the body or length of the pipe, and the lower portion thereof is shaped to give the required formation of the exterior of the socket end of the pipe. The upper portion of the die is formed with an annular recess, in which is placed the loose ring, preferably made in halves and so shaped as to form a tongue on the spigot. When the pipe is made and the die is opened out the loose ring remains on the pipe and is afterwards lifted off, the shape of the tongue being such that the die, if the ring were attached thereto, would not "draw away" from the pipe.

18,373 of 1904.—E. KUCKELHAUS: *Detachable Connexions for Furniture Parts and Other Articles.*

A detachable connexion for furniture parts and other articles, comprising a keeper plate, a slot in said plate being bent outwards at the slotted portion, in combination with a locking plate with a laterally reduced part corresponding to the slot and consisting of a hook strip and a narrow adjacent strip with shoulders, said strip parts being bent inwards.

18,394 of 1904.—E. J. B. SCRATTON: *Holding Doors, Casements, or the like, Closed or Open or at any Desired Angle.*

In carrying into practice the improvements of this invention, a vertical tube of a suitable length is secured to the door, preferably near its opening edge, so that its lower end is situated a short distance above the floor. A rod, which may be round or square, is carried within the tube, and is fitted at its lower end with a catch or holder and at its upper end with a handle, preferably horizontal. The tube has a notch formed at one side of its top end to receive the handle when it is desired to hold the catch clear off the floor, and another and deeper notch in which the handle is placed so as to allow the rod to descend and the catch to come into action.

18,576 of 1904.—R. SCHOLEFIELD: *Machinery or Apparatus Employed in the Manufacture of Bricks, Tiles, and for like Forms.*

Means for automatically relieving the pressure of the material in the pug upon the intermittently rotating cylinder of the machine without dispensing with the continuous rotation of the screw-like blades of the pug. The combination of an intermittently rotating cylinder and pug, with a pug shaft having screwlike blades fixed thereon, and provided with an end adapted to fit a central hole in the rotating trunnion bearing, and means for causing the said shaft to travel forwards in one direction, and to be returned in an opposite direction by the material operated upon, said movements of the shaft being simultaneous with its continuous rotation.

19,267 of 1904.—A. J. FAULDING and S. WALKER: *Stoves for Heating Water and the like.*

This invention relates to the provision of portable apparatus, compact in construction and of light weight, adapted for quickly heating water or the like when a small quantity is required, without the use of coal or like fuel. In carrying out the invention, a stove is constructed of convenient height for the purpose, rectangular or of other suitable form in section, and of a size adapted for the reception of a fire lighter of the "Quicklit" type. The stove is by preference made of sheet metal, with openings cut through the metal plate walls at or near the base of stove, and above these openings are other perforations cut in such a way and of such form that, when the base of the separated pieces are bent towards the interior of stove, they form a grate for supporting the fire lighter, which may be ignited in any convenient manner. The last-mentioned perforations admit air to the sides of the burning fire lighter within, thus supplementing the current of air passing from beneath the grate and through the ventilated fire lighter, in the manner for effecting complete and rapid combustion. The flame from the burning fire lighter impinges direct upon the kettle or the like, and between the grate and top of stove, other perforations or openings are made for allowing the products of combustion and heated gases to escape, and thereby assist in the rapid heating of the water or the like.

22,907 of 1904.—J. J. MACKY: *Fastenings for Door Handles.*

A fastening for door handles consisting of a collar or thimble coarse screwed externally to drive directly into a tapped hole in the door stile and bored conically to take against a conical back nut on the shank of the handle.

3,423 of 1905.—J. SPARLA: *Machines for Stamping Pipes.*

A machine for stamping pipes, consisting of a stamper of the same annular shape as the mould and tapering towards the bottom, which is raised by means of a rope fastened to it and a rotating lever, which lever, after it has been turned a certain distance, lets the rope go, so that the stamper drops by its own weight, a feeding or filling device, consisting of a double-walled funnel, whose inside wall is lifted during the ascent of the

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

stamper and then caused to drop for the purpose of introducing the fresh material to be stamped, through the slit formed during this operation.

4,600 of 1905.—H. COOLEY: *Method of Key-and-Dowelling Wood-block Floors and Pavements.*

The invention consists of a double-pointed dowel-key, made of suitable strength to be used for the purpose of fastening together floor or paving blocks. Between the points, preferably midway, of the parts forming the shanks is a disc, intended to form the key. On two edges, and at the extremeties of the disc, are formed little projections or points. The edges of the portions forming the disc may vary in shape as desired, according to the grooves in the blocks to which they have to conform, while the shanks may be of any convenient cross section. The concrete for the floors is prepared in the usual way. The blocks to be used may be prepared round their lower edges with any of the kind of grooves used for keying purposes. In this groove, at the end or side of the block and at any convenient distance from the end or side, is made a small hole, which is less than the circumference of the shank of the dowel. The block is then placed in position on the concrete and the end of the dowel-key inserted, another block similarly prepared is placed with the other end of the dowel-key resting in the small hole for it. A smart tap is now given to the block, and this process is continued.

7,761 of 1905.—C. W. KUCHENMEISTER and P. THOMANN: *Brick-moulding Machines.*

This invention relates to brick-moulding machines, characterised in that on an endless chain transverse partitions are fixed and provided with notches, into which enter, when the chain is moving forward, longitudinal ledges, whereby, after the base plate has been inserted before the partitions and ledges catch each other, ready moulds are formed in which the material is filled and firmly rammed in, whereupon, after the ledges and partitions are again released from each other by the chain moving further forward, the base plates can be taken out together with the ready bricks placed thereon.

8,024 of 1905.—E. LAINE: *Manufacture of Composition for Building and Other Purposes.*

According to the invention, silk screens allow the material to pass in grains, which are too large and insufficiently permeable to be liquids, and are used for converting it into paste. In order to obtain such paste in a state of perfection, with eliminations of the iron, lime, or manganese impurities, it is necessary to prepare it by wet-hot process by precipitation—that is to say, in the so-called atomic state. Then it is well washed and calcined in an open vessel, so as to deprive it completely of water and expel the last traces of carbonic acid. The material thus obtained is then mixed in suitable proportions with a liquid of the following composition, the proportions being by volume:—Three volumes of pure chloride of magnesium, one volume of alcohol denaturised by acetone, to which cellulose has been added, and containing subsequently in solution a variable proportion of gum, elemi gum sandarac, or the pure resin of pinus laryx.

8,398 of 1905.—F. SHEPPARD and F. D. KELLY: *Manufacture of Paving Slabs, Stair Treads, Steps, and the like.*

This invention relates to paving slabs, steps, stair treads, and the like, manufactured from a combination of Kentish rag stone, dust, Bath stone dust made into a slurry with a binding material, such as Portland cement, adding furnace slag in lumps of a small size, thoroughly amalgamating same together and moulding same to the desired shape, and drying naturally or artificially.

9,689 of 1905.—O. S. LAMBERSON and P. R. MOSLEY: *Mould for Cement Blocks.*

In a mould, the combination of sides and ends, catches carried by the sides and engaging the ends, a bottom provided with a plurality of openings, a plurality of core blocks having their lower ends received in the openings of the bottom, one of the sides being also provided with a plurality of openings; therein core blocks disposed against the inner faces of the sides aforesaid, and having projections received by the openings in said side, and core members integral with the other side of the mould, and of substantially the same form as the core blocks adjacent the first-mentioned side.

12,295 of 1905.—J. M. PETTYJOHN: *Moulds for Building Blocks.*

A mould adapted to be lifted clear of the object moulded, and placed at a distance therefrom in readiness for the next succeeding moulding operation, consisting in the combination of a box having separable sides and ends, a bottom from which the said sides and ends may be freely withdrawn, a core for the interior of the mould, and means whereby the core may be secured to the bottom of the mould frames surrounding the box at a distance from the sides and ends thereof, arms hinged to said frames and to the sides and ends of the box, and a hopper carried by the frames so as to surmount the box, the arrangement being such that whilst in normal position the frames will resist pressure upon the sides and ends of the box from within the latter, and that by a continuous vertical movement of the frames the sides and ends of the box will first be withdrawn laterally from the bottom of the box and a moulded object standing thereon, and may thereafter be lifted clear of said object.

14,616 of 1904.—B. E. TODHUNTER: *Sluices and Sluice Gates.*

This relates to sluice gates and the like, consisting in the use and arrangements of the movable side beams for separating the sluice gate from its joint seating, in combination with fixed guide weights, which weights form a continuation of the movable beams when the latter are in their forward position, the movable beams and fixed weights then forming a continuous weight for the anti-friction rollers of the sluice gate to work on during the opening and closing of the sluice.

754 of 1905.—E. A. GREEN: *Channel Junctions, Channel Couplings, and Channels for Use in or about the Inspection Chambers of Drains and Sewers.*

The construction of channel junctions with straight or curved main channels and single or double right or left side channels characterised by a gradual change of cross section of the main and side channels, both narrowing in plan as well as deepening in vertical section to their junction with one another, and being prior to their junction, separated by a tongue or diaphragm gradually diminishing in thickness.

2,013 of 1905.—P. LAFFITTE: *Impregnation and Colouration of Timber.*

An apparatus for impregnating timber, consisting in the combination of a receiver provided with a bevelled rib adapted to be driven into the end surface of a log of timber, the external faces of the rib being cylindrical or only slightly conical and the internal faces thereof more distinctly conical.

TO CORRESPONDENTS.

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All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

July 10.—By FAREBROTHER, ELLIS, & Co. (at Tamworth).

Clifton Campville, etc., Staffs.—"The Clifton Campville and Haunton Estate," 2,736 a., f. (in numerous lots)	£61,964

July 13.—By DILLEY, SON, & READ (at St. Neots).

Eaton Socon, Beds.—Freehold market garden land, 25 a. 2 r. 16 p, y.r. 50*l.*	1,125
Market garden land, 2 a. 3 r. 15 p., f.	210
Honeydon, Beds.—"Upper Honeydon Farm," 287 a. 0 r. 15 p., f., y.r. 100*l.*	2,650

July 15.—By THORNBORROW & Co. (at Keswick).

Rosthwaite, Cumberland.—"The Scawfell Hotel," 4 a. 3 r. 22 p., f., y.r. 150*l.*	2,700
Crosthwaite, Cumberland.—"Burns Estate," 129 a. 1 r. 14 p., f.	2,300
Keswick, Cumberland.—7, Blencathra-st., f., y.r. 30*l.*	560

July 17.—By BALLS & BALLS.

Finchingfield, etc., Essex.—"The Hole Farm," 180 a. 3 r. 26 p., f., y.r. 140*l.*	1,550

By BUCKLAND & SONS.

Farnham Royal, Bucks.—Main-rd., two building plots, f.	150
Main Road, corner building plot, f.	100

By CHESTERTON & SONS.

Kensington.—15, Phillimore-gdns., u.t. 48½ yrs., g.r. 15*l.*, y.r. 250*l.*	3,550
Forest Hill.—31 and 33, Rockbourne-rd., u.t. 51 yrs., g.r. 13*l.*, y.r. 56*l.*	370
Stanstead-rd., "Oak Lodge" with timber yd., u.t. 51 yrs., g.r. 15*l.*, y.r. 69*l.*	350

By DRIVERS'.

Holloway.—45, Windsor-rd., u.t. 47 yrs., g.r. 5*l.* 5s., y.r. 36*l.*	360

By E. J. GALE.

Bradwell-on-Sea, Essex.—"Orplands Estate," 239 a. 3 r. 3 p., f. and l.p.	4,500
"Goodgroom's and High Barn Estate," 89 a. 1 r. 26 p., f.	3,550

By WM. HOUGHTON.

Tottenham.—19 to 25 (odd), Connaught-ter., u.t. 34½ yrs., g.r. 14*l.*, w.r. 93*l.* 12s.	£370
Walthamstow.—61 to 67 (odd), Somers-rd., u.t. 77½ yrs., g.r. 16*l.*, w.r. 101*l.* 8s.	585
19, 21, and 23, Colchester-rd., f., w.r. 68*l.* 18s.	480
Chingford.—Hampton-rd., a block of building land, f.	300
Chingford-rd., a freehold building plot	120
Ainslie Wood-rd., a block of building land, 2½ acres, f.	250
Ainslie Wood-rd., a block of building land, f.	240

By KING & CHASEMORE.

Alfold, Surrey.—"Alfold House Farm," 182 a. 3 r. 2 p., f.	3,500
"Gibshatch Farmhouse" and 21 a. 3 r. 22 p., f.	850
"Roundles Copse," 12 a. 2 r. 12 p., f.	285
"Barbury Farmhouse" and 79 a. 0 r. 8 p., f.	800
"Songhurst New House" and 55 a. 2 r. 28 p., f.	1,350
Loxwood, Surrey.—"Willett's" and 14 a. 0 r. 5 p., f.	700
Enclosures of land, 18 a. 0 r. 32 p., f.	675
"Blackhall House" and 2 a. 1 r. 24 p., f.	500
Enclosures of land, 11 a. 3 r. 7 p., f.	250
Rudgwick, Sussex.—"Saxes Plot Cottage" and 2¼ a., f.	270

By MORGAN, BAINES, & CLARK.

Sutton, Surrey.—Cheam-rd., "Norfolk House," f., y.r. 110*l.*	1,400
Wallington.—Park-la., f.g. rents 15*l.*, reversion in 93 and 97 yrs.	365

By A. SAVILL & SONS.

Sutton Vallence, Kent.—Main-rd., building land, 3 a. 1 r. 38 p., f.	250
Main-rd., building land, 24 a. 1 r. 23 p., f.	1,450
"Heavon Farm," 4 a. 1 r. 23 p., f.	560
Main-rd., building land, 4 a. 2 r. 30 p., f.	220
"Lower Farm," 122 a. 0 r. 27 p., f.	1,400
Witham, Essex.—"Benton Hall Farm," 174 a. 2 r. 24 p., f. (in lots)	3,590
"Freebourne's Farm," 202 a. 2 r. 17 p., f.	6,400
"Turn Table Field." 2 a. 3 r. 28 p., f.	110
"Rickstone's Farm," 158 a. 1 r. 6 p., f.	1,500

By T. B. WESTACOTT.

Stoke Newington.—3 and 5, Brooke-rd., u.t. 76¾ yrs., g.r. 12*l.* 10s., y.r. 102*l.*	975

By JOHN KITTOW (at Launceston).

Broadwoodwidger, Devon.—"Beckett Farms" (three), area 330 a., f.	2,825

July 18.—By C. H BROWN.

Fulham.—20, Ryecroft-st., u.t. 86½ yrs., g.r. 6*l.*, p.	610

By MAY & PHILPOT.

Brixton.—10, Dalberg-rd., u.t. 64 yrs., g.r. 7*l.* 7s., e.r. 42*l.*	300
36, Rattray-rd., u.t. 69 yrs., g.r. 5*l.* 7s. 6d., e.r. 40*l.*	300
58, Beechdale-rd., u.t. 85 yrs., g.r. 7*l.*, e.r. 45*l.*	485

By MILLAR, SON, & Co.

Binstead, Isle of Wight.—Three freehold cottages and gardens	550
A freehold beerhouse and three cottages and gardens, y.r. 32*l.*	660
Penge.—Linden-gr., f.g. rents 65*l.*, reversion in 77 yrs.	1,505
Hornsey.—Sydney-rd., f.g. rents 36*l.*, reversion in 77 yrs.	870

By STOCKINGS & POTTER.

Hackney.—Morning-la., "The Globe" p.h., c.g.r. 45*l.*, reversion in 43 yrs.	1,010

By WALTON & LEE.

Oxshott Heath, Surrey.—"Heatherwold" and 2 a., u.t. 93 yrs., g.r. 25*l.*, p.	3,700
Churchstow, Devon.—"The Whitehall Estate," 98 a. 3 r. 13 p., f.	4,975

By THORNBORROW & Co. (at Penrith).

Watermillock, Cumberland.—Homestead and 85 a. 3 r. 22 p., f. and c.	2,850
Renwick, Cumberland.—"Queen's College Inn," f.	160

By TOMKINS & CAPPER (at Abergavenny).

Abergavenny, Monmouth.—5, Frogmore-st. (s.), f.	2,000
King-st., range of stabling, u.t. 72½ yrs., g.r. 10*l.* 1s. 9d.	250
Albany-rd., "Birchfield," u.t. 981 yrs., g.r. 4*l.*	600

By H. J. CHEFFINS (at Saffron Walden).

Wimbish, Essex.—"New House Farm" and "Croney Wood," 281 a. 3 r. 33 p., f.	3,020
Radwinter, Essex.—"Godfrey's Farm," 41 a. 3 r. 5 p., c.	225

By MOORE, GARRARD, & SON (at Ipswich).

Eye, Suffolk.—"The Uplands Farm," 54 a. 3 r. 26 p., f. and c.	840
Huntingfield, Suffolk.—"The High House" and 78 a. 2 r. 20 p., f.	450
Cratfield, Suffolk.—"The Manor Farm," 94 a. 0 r. 27 p., f.	700
"Turkey Hall Farm," 72½ acres, f. and c.	430

July 19.—By H. DONALDSON & SONS.

Stoke Newington.—Lordship-gr., l.g.r. 28*l.*, u.t. 57 yrs., g.r. 4*l.*	375

By HAROLD GRIFFIN.

Battersea.—8 to 13, Church-lane, u.t. 79½ yrs., g.r. 15*l.*, w.r. 104*l.*	540
120, St. John's-hill, f., p.	500

By HUMBERT & FLINT.

Dinton, Bucks.—Ford Farm, 187 a. 1 r. 3 p., f.	5,200
Northwood, Middx.—Green-la., 5 freehold building sites, area 6 a. 1 r. 1 p.	2,170

By F. JOLLY & JAMES.

Victoria Park.—2, 4, and 6, White Post-la., f., w.r. 79*l.* 6s.	800

By RUTLEY, SON, & VINE.

Camden Town.—1A, and 1 to 14, Reeds-pl., u.t. 17 yrs., g.r. 37*l.*, w.r. 468*l.*	2,220
Hampstead.—96, Adelaide-rd., u.t. 41 yrs., g.r. 15*l.*, p.	400
198, Adelaide-rd., u.t. 48 yrs., g.r. 14*l.* 14s., y.r. 65*l.*	410
Regent's Park.—67 and 67A, Osnaburgh-st., u.t. 18 yrs., g.r. 28*l.*, p., and y.r. 40*l.*	400
Harrow.—Spencer-rd., "Sunnyside" and "Brookside," f., y.r. 60*l.*	1,040

By DEBENHAM, TEWSON, & CO., with MATTHEWS, MATTHEWS, & GOODMAN (at Winchester House).

Woolwich, Kent.—Burrage-rd., f.g. rents 22*l.* 15s., reversion in 3 and 4¼ yrs. £3,180
Arthur-st., f.g. rents 39*l.* 5s., reversion in 4 to 7¾ yrs. 4,765
Maxey-rd., f.g.r. 13*l.* 3s. 6d., reversion in 3½ to 7½ yrs. 1,750
Maxey-rd., "Windsor Castle" p.h., f.g.r. 16*l.* 10s., reversion in 13½ yrs. 2,200
Arthur-st., f.g. rents 32*l.* 4s., reversion in 4½ to 7¾ yrs. 3,925
Burrage-rd., f.g. rents 32*l.*, reversion in 3½ yrs. 4,675
Burrage-rd., "Crown and Sceptre" b.h., f.g.r. 15*l.*, reversion in 14½ yrs. 1,200
Charles-st., f.g. rents 21*l.*, reversion in 3½ and 17½ yrs. 1,750
Maxey-rd., f.g. rents 104*l.* 14s., reversion in 4½ to 24 yrs. 6,535
Dawson-st., etc., f.g. rents 63*l.*, reversion in 23½ to 25½ yrs. 2,320
Pattison-rd., f.g.r. 9*l.* 18s., reversion in 26½ yrs. 390
Richmond-pl., f.g. rents 71*l.* 8s., reversion in 12½ to 25½ yrs. 2,810
Pattison-rd., f.g.r. 11*l.* 10s., reversion in 14 to 18 yrs. 740
Vicarage-rd, f.g.r. 14*l.* 10s., reversion in 12½ and 13½ yrs. 1,020
Railway-pl., f.g r. 22*l.* 16s., reversion in 6½ to 14¾ yrs. 2,150
Pattison-rd., f.g.r. 18*l.* 10s., reversion in 16¾ to 19½ yrs. 1,060
Richmond-pl., f.g.r. 17*l.* 8s., reversion in 12 to 18½ yrs. 880
Burrage-rd , f.g. rents 39*l.* 5s., reversion in 5½ to 15½ yrs. 4,525
Chester-pl., f.g.r. 11*l.* 5s., reversion in 15½ to 17½ yrs. 660
Maxey-rd., f.g. rents 39*l.* 15s., reversion in 16 and 17½ yrs. 2,275
Charles-st., f.g r. 20*l.* 5s., reversion in 17½ yrs. 1,075
Burrage-rd., f.g. rents 34*l.* 10s., reversion in 12 to 14 yrs. 3,050
Raglan-rd., f.g. rents 38*l.* 15s., reversion in 15 and 16 yrs. 1,650
Maxey-rd., f.g.r. 27*l.*, reversion in 15½ to 17 yrs. 1,550
Chester-pl., f.g.r. 18*l.* 1s., reversion in 16 yrs. 980
Raglan-rd., f.g. rents 27*l.*, reversion in 15½ yrs. 1,510
Raglan-rd., "Prince Alfred" p.h., f.g.r. 15*l.*, reversion in 25½ yrs. 1,500
Pattison-rd., f.g.r. 16*l.* 10s., reversion in 19½ yrs. 1,175
Sandbach-pl., f.g.r. 13*l.* 17s. 6d., reversion in 15½ to 18¾ yrs. 575
Maxey-rd., f.g. rents 20*l.* 5s., reversion in 16½ yrs. 1,190
Maxey-rd., f.g.r. 15*l.* 15s., reversion in 16½ yrs. 900
Swetenham-pl., f.g. rents 43*l.* 17s. 6d., reversion in 18 and 19 yrs. 1,925
Pattison-rd., f.g.r. 14*l.*, reversion in 19½ and 24½ yrs. 550
Sandbach-pl., f.g.r. 20*l.* 15s., reversion in 18½ yrs. 1,020
Maxey-rd., f.g.r. 13*l.* 10s., reversion in 16¾ to 18¾ yrs. 840
Dawson-st., f.g. rents 46*l.*, reversion in 20½ to 25½ yrs. 1,750
Pattison-rd., f.g.r. 24*l.* 5s., reversion in 18½ to 26 yrs. 1,000
Swetenham-pl., f.g. rents 32*l.* 7s. 6d., reversion in 18½ to 19½ yrs. 1,410
Pattison-rd., f.g. rents 101*l.* 7s. 6d., reversion in 18 to 40½ yrs. 5,330
Pattison-rd., "Star and Garter" p.h., f.g.r. 15*l.*, reversion in 25½ yrs 1,500
Raglan-rd., f.g.r. 11*l.* 17s. 6d., reversion in 19½ yrs. 480
Hudson-rd., etc., f.g. rents 47*l.* 5s., reversion in 18¾ and 19½ yrs. 2,060
Vicarage-rd., etc., f.g. rents 33*l.* 5s., reversion in 19½ yrs. 1,560
Hudson-rd., f.g.r. 18*l.* 15s., reversion in 19½ yrs. 880
Raglan-rd., f.g.r. 22*l.*, reversion in 19½ to 36½ yrs. 960
Vicarage-rd., f.g.r. 12*l.*, reversion in 21 yrs. 820

By SPELMANS' (at Yarmouth).

Ormesby St. Michael, Norfolk.—The "Eels Foot" b h., with boat houses and landing stage, are a 2 a. 1 r. 0 p., f. 2,475
Two freehold cottages and 0 a. 1 r. 16 p. 150
Five enclosures of land, 6 a. 2 r. 31 p., f. 545

By H. & R. L. COBB (at Faversham).

Ospringe, Kent.—Freehold house, cottage, and nursery ground, 2 a. 2 r. 20 p., f., y.r. 30*l.* 550
Forge, house, and two cottages, f. 460
Faversham, Kent.—38, Stone-st., f., y.r. 40*l.* 650

By NASH, SON, & ROWLEY (at Royston).

Melbourn, Cambs.—Copyhold farmhouse and 4 a. 3 r. 21 p. 390
Enclosures of pasture, 16 a. 3 r. 25 p., f. 655
Three freehold and copyhold cottages 180
Three cottages, farm premises, and 3 a. 2 r. 34 p., c. 370
Two copyhold cottages and 0 a. 1 r. 20 p. 210
Four freehold plots of land 285
Four freehold allotments, 32 a. 0 r. 32 p. 700
The White House Farm, 182 a. 3 r. 2 p., f. and c. 2,850
The Grange Farm, 229 a. 3 r. 33 p., c. 1,500
A freehold residence 260

July 20.—By C. ATKINS.

Brockley.—Colgate-st., f.g.r. 30*l.*, reversion in 65 yrs. 710
Catford.—2, Rushey-green (s.), f., y.r. 65*l.* 1,300

By H. J. BLISS & SONS.

Woodford.—Maybank-rd., "Gordon House," f., e.r. 32*l.* 410

By DOWSETT, KNIGHT, & CO.

Waltham Abbey, Essex.—Sewardstone-rd., enclosures of pasture and garden land, 7 a. 3 r. 20 p., f., y.r. 40*l.* 1,780
Townmead-rd., two blocks of building land, 1 a. 0 r. 10 p., f. 400

By C. C. & T. MOORE.

Clerkenwell.—53, Exmouth-st. (s.), u.t. 10½ yrs., g.r. 6*l.* 6s., y.r. 47*l.* 10s. £180
Ilford.—Ilford-la., "Salisbury House," area 20,000 ft., f., p. 2,750
2, Valentine's-rd., f., y.r. 40*l.* 550
Stepney.—6 and 8, Copley-st., u.t. 37 yrs., g.r. 8*l.*, w.r. 75*l.* 8s. 405
Woodford.—Derby-rd., "Rochdale," "South Villa," and "Essex Villa," f., y.r. 95*l.* 1,035

By NEWBON, EDWARDS, & SHEPHARD.

Canonbury.—50, Canonbury-pk. North, u.t. 31 yrs., g.r. nil, e.r. 50*l.* 480
Hornsey.—97 and 99, Sydney-rd., u.t. 76½ yrs., g.r. 12*l.*, w.r. 72*l.* 16s. 450
Islington.—56, Packington-st., u.t. 31 yrs., g.r. 6*l.* 6s., y.r. 50*l.* 320
12, 14, 16, and 18, Church-la. (s.), u.t. 39½ yrs., g.r. 24*l.*, y.r. 92*l.* 485
Caledonian Road.—No. 399 (s.), u.t. 41½ yrs., g.r. 10*l.*, y.r. 60*l.* 415
Westbourne Park.—21, Wornington-rd., u.t. 61 yrs., g.r. 7*l.*, w.r. 55*l.* 18s. 305
Stoke Newington.—15, Queen Margaret's-gr., u.t. 44½ yrs., g.r. 5*l.* 5s., e.r. 38*l.* 340
Hackney Road.—Nos. 225 and 227, a freehold building site, area 3,500 ft. 860

By STIMSON & SONS.

Stockwell.—2 to 9, Love-la., u.t. 62 yrs., g.r. 24*l.*, w.r. 208*l.* 1,570
Holloway.—[illegible] St. George's-av., u.t. 61¾ yrs., g.r. 8*l.*, e.r. 55*l.* 600
Clapham.—65 and 67, Solon New-rd., u.t. 74 yrs., g.r. 13*l.*, e.r. 76*l.* 600
Wandsworth-road.—Nos. 428 and 430 (s.), y.r. 66*l.*, also i.g.r. 15*l.*, u.t. 19 yrs., g.r. 12*l.* 400
Peckham.—167, Camden-grove North, u.t. 61½ yrs., g.r. 6*l.* 10s., y.r. 32*l.* 320
Hammersmith.—49, Fenbow-rd., u.t. 58½ yrs. g.r. 5*l.*, e.r. 32*l.* 300

By JOSEPH STOWER.

Regent-street.—27, Maddox-st., area 2,210 ft., building lease for 80 yrs., let at per annum 425

By J. A. & W. THARP.

Homerton.—41, High-st. (s.), and 1 to 4, Haywood-bldgs., with dairy and stabling, f., y.r. 94*l.* 1,020
Leytonstone.—626, Leytonstone-rd., f., p. 1,530
4, Cobden-rd., u.t. 72 yrs., g.r. 4*l.*, w.r. 26*l.* 165

By HALL, PAIN, & CO. (at Portsmouth).

Fareham, Hants.—"East Hill" Farmery and 7 a. 1 r. 29 p., f. 2,250
"Wallington House" Farmery and 6 a. 0 r. 13 p., f. 2,450
The Fareham Industrial Home, also "Ada Cottage," f. 950

July 21.—By G. F. HARRINGTON.

Stockwell.—Moat-pl., f.g.r. 10*l.* 1s., reversion in 38 yrs. 240
13, 15, 19, and 21, Moat-pl., f., w.r. 104*l.* 1,205
28, 30, and 32, Moat-pl., u.t. 38½ yrs., g.r. 25*l.*, w.r. 90*l.* 14s. 465
Clapham.—36, 46, and 48, Gaskell-st., u.t. 56½ yrs., g.r. 11*l.* 5s., w.r. 97*l.* 10s. 910
Kennington.—26, Carroun-rd., u.t. 19 yrs., g.r. 4*l.* 7s. 6d., y.r. 30*l.* 165
1 to 13 (odd), Trigon-gr., u.t. 19 yrs., g.r. 30*l.*, w.r. 174*l.* 4s. 750
South Lambeth.—33 and 35, Hartington-rd., u.t. 50 yrs., g.r. 6*l.*, w.r. 36*l.* 8s. 585
Clapham.—68 and 70, Jeffery's-rd., f., y.r. 88*l.* 1,010
66, Jeffery's-rd., f., p. 505
Battersea.—22 and 24, Heaver-rd., u.t. 72½ yrs., g.r. 10*l.*, w.r. 65*l.* 480
Rotherhithe.—51 and 53, Union-rd., y.r. 71*l.* 12s., also i.g.r. 3*l.* 15s., u.t. 45½ yrs., g.r. 10*l.* 9s. 6d. 480
Tooting.—Charlmont-rd., two corner building sites, f. 400

By W. B. HALLETT.

City.—Ivy-la., etc., f.g r. 325*l.*, reversion in 69 yrs. 8,600
23, Budge-row (shop, offices, etc.), area 1,125 ft., f., e.r. 600*l.* 6,550
Smithfield.—20, Cloth Fair and 2, Back-court (Phelan's Dairy), f., y.r. 42*l.* 1,030
32 and 33, Cloth Fair (s.), f., y.r. 60*l.* 1,840

By JONES, LANG, & CO.

Barnes.—The Terrace, f.g. rents 39*l.*, reversion in 79 yrs. 1,085
Kensington.—Sinclair-rd., f.g.r. 30*l.*, reversion in 70 yrs. 805
Ealing.—Eaton Rise, f.g. rents 94*l.* 10s., reversion in 61 and 63 yrs. 2,760
Tottenham.—Clarendon-rd., f.g.r. 10*l.* 10s., reversion in 82½ yrs. 285
Vincent-rd., f.g.r. 23*l.* 10s., reversion in 79½ yrs. 575
Fulham.—Moylan-rd., f.g. rents 84*l.*, reversion in 85 yrs. 2,030
"Purcell-cres., f.g.r. 5*l.*, reversion in 73 yrs. 120
Shortlands, Kent.—Martin's-rd., f.g. rents 17*l.*, reversion in 84½ yrs. 410

By BISLEY & SONS.

Rotherhithe.—43 and 45, Delaford-rd., u.t. 72 yrs., g.r. 10*l.*, w.r. 75*l.* 8s. 540
14, Milledge-st., u.t. 72 yrs., g.r. 5*l.*, w.r. 36*l.* 8s. 250
578 and 580, Rotherhithe-st., f., w.r. 44*l.* 4s. 480

By ELLIOTT, SON, & BOYTON.

Holloway.—14, Tavistock-ter., u.t. 32½ yrs., g.r. 2*l.* 6s., y.r. 35*l.* 315
Pimlico.—21, Bessborough-pl., u.t. 21½ yrs., g.r. 6*l.*, y.r. 40*l.* 250
Chelsea.—22, Redesdale-st., u.t. 47 yrs., g.r. 6*l.* 10s., y.r. 56*l.* 625

By PERKINS & CÆSAR.

Bermondsey.—50 to 56 (even), Yalding-st., u.t 29 yrs., g.r. 16*l.*, w.r. 135*l.* 4s. 740
Plaistow.—Chapman-rd., f.g.r. 20*l.*, reversion in 57 yrs. 445
Libra-rd., f.g.r. 15*l.*, reversion in 58¼ yrs. 320
Forest Gate.—Tower Hamlet's-rd., f.g.r. 10*l.*, reversion in 55¾ yrs. 215

By NICHOLAS, DENYER, & CO.

Camberley, Surrey.—"Collingwood Lodge" and 8 a. 3 r. 34 p., f. 2,995

By TOWERS, ELLIS, & CO.

Hyde Park.—76, Porchester-ter., u.t. 38 yrs., g.r. 14*l.*, e.r. 130*l.* £1,000

By E. FERGUSON TAYLOR.

Finchley.—Grove-ter., i.g.r. 30*l.*, u.t. 58 yrs., g.r. 10s. 508

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beerhouse; p.h. for public-house; o. for offices; s. for shops; ct. for court.

MEETINGS.

SATURDAY TO MONDAY, JULY 29-31.

Institute of Sanitary Engineers, Ltd.—Summer Outing, to Southampton.

WEDNESDAY, AUGUST 2.

Builders' Foremen and Clerks of Works' Institution.—Ordinary Meeting of the Members. 8 p.m.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£	s.	d.			
Hard Stocks.	1	10	0	per 1000	alongside,	in river.
Rough Stocks and Grizzles	1	6	6	,,	,,	,,
Facing Stocks ...	2	2	0	,,	,,	,,
Shippers	2	2	0	,,	,,	,,
Flettons	1	7	0	,,	at railway depôt.	
Red Wire Cuts ...	1	14	0	,,	,,	,,
Best Fareham Red	3	12	0	,,	,,	,,
Best Red Pressed Ruabon Facing	5	0	0	,,	,,	,,
Best Blue Pressed Staffordshire ...	4	2	6	,,	,,	,,
Do. Bullnose	4	7	6	,,	,,	,,
Best Stourbridge Fire Bricks.....	4	0	0	,,	,,	,,
GLAZED BRICKS.						
Best White and Ivory Glazed Stretchers	12	0	0	,,	,,	,,
Headers	11	0	0	,,	,,	,,
Quoins, Bullnose, and Flats.....	16	0	0	,,	,,	,,
Double Stretchers	19	0	0	,,	,,	,,
Double Headers...	16	0	0	,,	,,	,,
One Side and two Ends	19	0	0	,,	,,	,,
Two Sides and one End	20	0	0	,,	,,	,,
Splays, Chamferred, Squints	20	0	0	,,	,,	,,
Best Dipped Salt Glazed Stretchers, and Header	12	0	0	,,	,,	,,
Quoins, Bullnose, and Flats.....	14	0	0	,,	,,	,,
Double Stretchers	15	0	0	,,	,,	,,
Double Headers...	14	0	0	,,	,,	,,
One Side and two Ends	15	0	0	,,	,,	,,
Two Sides and one End	15	0	0	,,	,,	,,
Splays, Chamferred, Squints	14	0	0	,,	,,	,,
Second Quality White and Dipped Salt Glazed	2	0	0	,,	less than best.	

	s.	d.		
Thames and Pit Sand.....	7	0	per yard,	delivered.
Thames Ballast.....	5	9	,,	,,
Best Portland Cement	27	0	per ton,	,,
Best Ground Blue Lias Lime	20	0	,,	,,

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime.....12s. 0d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly. dpt.

STONE.

	s.	d.		
BATH STONE—delivered on road waggons, Paddington Depôt	1	6½	per ft. cube.	
Do. do. delivered on road waggons, Nine Elms Depôt	1	8½	,,	,,
PORTLAND STONE (20 ft. average)—Brown Whitbed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf...	2	1	,,	,,
White Basebed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf...	2	2½	,,	,,

	s.	d.		
Ancaster in blocks	1	11	per ft. cube,	deld. rly. depôt.
Beer ,, ...	1	6	,,	,,
Greenshill ,, ...	1	10	,,	,,
Darley Dale in blocks...	2	4	,,	,,
Red Corsehill ,,	2	5	,,	,,
CloseburnRedFreestone	2	0	,,	,,
Red Mansfield ,,	2	4	,,	,,
YORK STONE—*Robin Hood Quality.*				
Scappled random blocks	2	10	,,	,,
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	3	per ft. super.	,,
6 in. rubbed two sides ditto, ditto	2	6	,,	,,
3 in. sawn two sides slabs (random sizes)	0	11½	,,	,,
2 in. to 2½ in. sawn one side slabs (random sizes)	0	7½	,,	,,
1½ in. to 2 in. ditto, ditto	0	6	,,	,,

STONE (*continued*).

HARD YORK—	s. d.	
Scappled random blocks 6 in. sawn two sides, landings to sizes (under 40 ft. super.)	3 0	per ft.cube, deld.rly.depôt.
6 in. rubbed two sides ditto	2 8	per ft. super. "
3 in. sawn two sides (slabs random sizes)	3 0	" "
2 in. self-faced random flags	1 2	" "
	0 5	" "
	s. d.	
Hopton Wood (Hard Bed) in blocks	2 0	per ft. cube. deld. rly. depôt.
" " " 6 in. sawn both sides landings	2 7	per ft. super. deld. rly. depôt.
" " " 3 in. sawn both sides random slabs	1 0	" "
" " " 2 in. do.	0 8½	" "

SLATES.

in. in.	£ s. d.	
20 × 10 best blue Bangor	13 2 6	per 1000 of 1200 at r. d.
20 × 12 " "	13 17 6	" "
20 × 10 first quality "	13 0 0	" "
20 × 12 " " "	13 15 0	" "
16 × 8 " " "	7 5 0	" "
20 × 10 best blue Portmadoc	12 12 6	" "
16 × 8 " "	6 12 6	" "
20 × 10 best Eureka unfading green	15 17 6	" "
20 × 12 " "	18 7 6	" "
18 × 10 " "	13 5 0	" "
16 × 8 " "	10 5 0	" "
20 × 10 permanent green	11 12 6	" "
18 × 10 " "	9 12 6	" "
16 × 8 " "	6 12 6	" "

TILES.

	s. d.	
Best plain red roofing tiles	42 0	per 1000 at rly. depôt.
Hip and Valley tiles	3 7	per doz. " "
Best Brosely tiles	50 0	per 1000 " "
Do. Ornamental tiles	52 6	" " "
Hip and Valley tiles	4 0	per doz. " "
Best Ruabon red, brown, or brindled do. (Edwards)	57 6	per 1000 " "
Do. Ornamental do	60 0	" " "
Hip tiles	4 0	per doz. " "
Valley tiles	3 0	" " "
Best Red or Mottled Staffordshire do. (Peakes)	51 9	per 1000 " "
Do. Ornamental do	54 6	" " "
Hip tiles	4 1	per doz. " "
Valley tiles	3 8	" " "
Best "Rosemary" brand plain tiles	48 0	per 1000 " "
Best Ornamental tiles	50 0	" " "
Hip tiles	4 0	per doz. " "
Valley tiles	3 8	" " "
Best "Hartshill" brand plain tiles, sand faced.	50 0	per 1000 " "
Do. pressed	47 6	" " "
Do. Ornamental do	50 0	" " "
Hip tiles	4 0	per doz. " "
Valley tiles	3 6	" " "

WOOD.

BUILDING WOOD.	At per standard. £ s. d.	£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in	13 10 0	15 0 0
Deals: best 3 by 9	13 0 0	14 0 0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11 0 0	12 0 0
Battens: best 2½ by 6 and 3 by 6	0 10 0	less than 7 in. and 8 in.
Deals: seconds	1 0 0	less thn best.
Battens: seconds	0 10 0	" "
2 in. by 4 in. and 2 in. by 6 in.	9 0 0	10 0 0
2 in. by 4½ in. and 2 in. by 5 in.	8 10 0	9 10 0
Foreign Sawn Boards—		
1 in. and 1½ in. by 7 in.	0 10 0	more than battens.
¾ in.	1 0 0	"
	At per load of 50 ft.	
Fir timber: best middling Danzig or Memel (average specification)	4 10 0	5 0 0
Seconds	4 0 0	4 10 0
Small timber (8 in. to 10 in.)	3 12 6	3 15 0
Small timber (6 in. to 8 in.)	3 0 0	3 10 0
Swedish balks	2 10 0	3 0 0
Pitch-pine timber (30 ft. average)	3 5 0	3 15 0
JOINERS' WOOD.	At per standard.	
White Sea: first yellow deals, 3 in. by 11 in	24 0 0	25 0 0
3 in. by 9 in.	22 0 0	23 0 0
Battens, 2½ in. and 3 in. by 7 in.	16 10 0	18 0 0
Second yellow deals, 3 in by 11 in.	18 10 0	20 0 0
" " 3 in. by 9 in.	17 10 0	19 0 0
Battens, 2½ in. and 3 in. by 7 in.	13 10 0	14 10 0
Third yellow deals, 3 in. by 11 in. and 9 in.	13 10 0	15 0 0
Battens, 2½ in. and 3 in. by 7 in.	11 0 0	12 0 0
Petersburg: first yellow deals, 3 in. by 11 in.	21 0 0	22 10 0
Do. 3 in. by 9 in.	18 0 0	19 10 0
Battens	13 10 0	15 0 0
Second yellow deals, 3 in. by 11 in.	16 0 0	17 0 0
Do. 3 in. by 9 in.	14 10 0	16 0 0
Battens	11 0 0	12 10 0
Third yellow deals, 3 in. by 11 in.	13 0 0	14 0 0
Do. 3 in. by 9 in.	12 10 0	14 0 0
Battens	10 0 0	11 0 0
White Sea and Petersburg :—		
First white deals, 3 in. by 11 in.	14 10 0	15 10 0
" " 3 in. by 9 in.	13 10 0	14 10 0
Battens	11 0 0	12 0 0
Second white deals, 3 in. by 11 in.	13 10 0	14 10 0
" " 3 in. by 9 in.	12 10 0	13 10 0
" " battens	10 0 0	11 0 0
Pitch-pine: deals	16 10 0	20 0 0
Under 2 in. thick extra	0 10 0	1 0 0
Yellow Pine—First, regular sizes	44 0 0	upwards.
Oddments	32 0 0	"
Seconds, regular sizes	33 0 0	"
Yellow Pine oddments	28 0 0	"
Kauri Pine—Planks, per ft. cube	0 3 6	0 5 0

WOOD (*continued*).

JOINERS' WOOD (*continued*).	At per standard. £ s. d.	£ s. d.
Danzig and Stettin Oak Logs—		
Large, per ft. cube	0 3 0	0 3 6
Small " "	0 2 6	0 2 9
Wainscot Oak Logs, per ft. cube.	0 5 0	0 5 6
Dry Wainscot Oak, per ft. sup. as inch	0 0 8	0 0 9
¾ in. do. do.	0 0 7	—
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch	0 0 9	0 1 0
Selected, Figury, per ft. sup. as inch	0 1 6	0 2 6
Dry Walnut, American, per ft. sup. as inch	0 0 10	0 1 0
Teak, per load	17 0 0	22 0 0
American Whitewood Planks, per ft. cube	0 4 0	0 5 0
Prepared Flooring, etc.—	Per square.	
1 in. by 7 in. yellow, planed and shot	0 13 6	0 17 6
1 in. by 7 in. yellow, planed and matched	0 14 0	0 18 0
1¼ in. by 7 in. yellow, planed and matched	0 16 0	1 0 0
1 in. by 7 in. white, planed and shot	0 12 0	0 14 6
1 in. by 7 in. white, planed and matched	0 12 6	0 15 0
1¼ in. by 7 in. white, planed and matched	0 15 0	0 16 6
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0 11 0	0 13 6
1 in. by 7 in. do. do.	0 14 0	0 18 0
¾ in. by 7 in. white do. do.	0 10 0	0 11 6
1 in. by 7 in. do. do. do.	0 12 9	0 15 0
6 in. at 6d. to 9d. per square less than 7 in.		

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.	£ s. d.
Rolled Steel Joists, ordinary sections	6 0 0 ...	6 15 0
Compound Girders, ordinary sections	7 10 0 ...	8 10 0
Steel Compound Stancheons	9 2 6 ...	10 12 6
Angles, Tees and Channels, ordinary sections	7 10 0 ...	8 10 0
Flitch Plates	7 15 0 ...	8 5 0
Cast Iron Columns and Stanchions including ordinary patterns	6 12 6 ...	7 15 0

METALS.

	Per ton, in London. £ s. d.	£ s. d.
IRON—		
Common Bars	7 0 0 ...	7 10 0
Staffordshire Crown Bars, good merchant quality	7 10 0 ...	8 0 0
Staffordshire "Marked Bars"	9 10 0 ...	—
Mild Steel Bars	8 5 0 ...	8 15 0
Hoop Iron, basis price	8 15 0 ...	9 0 0
" " Galvanized	16 10 0 ...	—
(*And upwards, according to size and gauge.*)		
Sheet Iron, Black—		
Ordinary sizes to 20 g.	9 0 0 ...	—
" " 24 g.	10 0 0 ...	—
" " 26 g.	11 15 0 ...	—
Sheet Iron, Galvanised, flat, ordinary quality—		
Ordinary sizes—6 ft. by 2 ft. to 3 ft. to 20 g	12 10 0 ...	—
Ordinary sizes to 22 g. and 24 g.	13 0 0 ...	—
" " 26 g.	14 0 0 ...	—
Sheet Iron, Galvanised, flat, best quality—		
Ordinary sizes to 20 g.	15 10 0 ...	—
" " 22 g. and 24 g.	16 0 0 ...	—
" " 26 g.	17 10 0 ...	—
Galvanised Corrugated Sheets—		
Ordinary sizes 6 ft. to 8 ft. 20 g.	12 10 0 ...	—
" " 22 g. and 24 g.	13 0 0 ...	—
" " 26 g.	13 15 0 ...	—
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	11 0 0 ...	—
Best Soft Steel Sheets, 22 g. & 24 g.	12 0 0 ...	—
" " " 26 g.	13 10 0 ...	—
Cut nails, 3 in. to 6 in.	9 0 0 ...	9 10 0
(Under 3 in., usual trade extras.)		

LEAD, &c.

	Per ton, in London. £ s. d.	£ s. d.
LEAD—Sheet, English, 3 lb. and up	16 10 0 ...	—
Pipe in coils	17 0 0 ...	—
Soil pipe	19 10 0 ...	—
Compo pipe	19 10 0 ...	—
ZINC—Sheet—		
Vieille Montagne ton	29 15 0 ...	—
Silesian	29 10 0 ...	—
COPPER—		
Strong Sheet per lb.	0 0 11 ...	—
Thin " "	0 1 0 ...	—
Copper nails "	0 0 11 ...	—
BRASS—		
Strong Sheet "	0 0 10 ...	—
Thin " "	0 0 11 ...	—
TIN—English Ingots "	0 1 5½ ...	—
SOLDER—Plumbers' "	0 0 6½ ...	—
Tinmen's "	0 0 8 ...	—
Blowpipe "	0 0 9 ...	—

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2¾d. per ft. delivered.
" fourths	1¾d. " "
21 oz. thirds	3⅝d. " "
" fourths	2½d. " "
26 oz. thirds	4⅛d. " "
" fourths	3⅛d. " "
32 oz. thirds	5⅛d. " "
" fourths	4⅞d. " "
Fluted Sheet, 15 oz.	3⅛d. " "
" 21 oz.	4⅛d. " "
⅛ Hartley's Rolled Plate	2d. " "
⅛ " " "	2¼d. " "
¼ " " "	2½d. " "

OILS, &c.

	£ s. d.
Raw Linseed Oil in pipes per gallon	0 1 8½
" " in barrels "	0 1 10
" " in drums "	0 2 0
Boiled " in pipes "	0 1 11
" " in barrels "	0 2 0
" " in drums "	0 2 2
Turpentine, in barrels "	0 3 9
" in drums "	0 3 11

OILS, &c. (*continued*).

	£ s. d.
Genuine Ground English White Lead per ton	19 15 0
Red Lead, Dry "	19 5 0
Best Linseed Oil Putty per cwt.	0 6 6
Stockholm Tar per barrel	1 12 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 0
Fine Elastic Carriage	0 12 6
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 16 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flatting Varnish	0 18 0
White Copal Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 6
Berlin Black	0 16 0
Knotting	0 10 0
French and Brush Polish	0 10 0

TERMS OF SUBSCRIPTION.

"THE BUILDER" (Published Weekly) is supplied DIRECT from the Office to residents in any part of the United Kingdom at the rate of 19s. per annum (52 numbers) PREPAID. To all parts of Europe, America, Australia, New Zealand, India, China, Ceylon, etc., 26s. per annum. Remittances (payable to J. MORGAN) should be addressed to the Publisher of "THE BUILDER," Catherine-street, W.C.

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TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays*. [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l*., unless in some exceptional cases and for special reasons.]

* Denotes *accepted*. † Denotes *provisionally accepted*.

ABERSYCHAN.—For alterations and additions to classrooms, for the trustees of the English Congregational Church. Mr. G. Daniel, architect, Newport:—
W. Branch ..... £433 | R. Meara £430

ALTOFTS.—For the construction of new footpaths, for the Urban District Council. Mr. J. C. Coates, Surveyor, District Council Offices, Altofts. Quantities by Surveyor:—

Section A.

J. Brawham .. £128 10 0 | Swindel Smith, Southowran* £109 15 4½

Section B.

J. Brawham Altofts* ..... £92 10 0 | Swindel Smith £79 10 1½

BRIDLINGTON.—For erecting and completing a detached residence and premises, for Mrs. E. Dodgson. Mr. J. Earnshaw, architect, Wellington-road, Bridlington:—

W. Hoggard .. £767 13 6 | E. E. Yeomans £722 6 0
A. Garlam.... 765 5 0 | T. Spink..... 720 15 0
Smallwood & Shaw ..... 735 13 6 | E. Wilson 698 10 0
Sampson & Siddall .... 724 17 0 | F. Kneeshaw, Bridlington* 690 10 0

BRIGHTON.—For repairs, painting, etc., to Council Schools, for the Education Committee. Messrs. T. Simpson & Son, surveyors, 17, Ship-street, Brighton:—

Middle-street School, and No. 31, *Middle-street, Brighton.*

S. Worsley & Co. £52 10 0 | Gates & Sons, 1, North-road, Brighton‡.... £21 19 0
J. Barnden 30 18 6
G. R. Lockyer.. 22 10 0

Elm-grove School, and Nos. 36 *and* 37, *Coleman-street, Brighton.*

F. Geering & Sons..... £103 0 0 | Gates & Sons, 1, North-road, Brighton‡.... £85 0 0
J. Barnden.... 98 18 6
R. G. Lockyer.. 96 0 0

Richmond-street and Sussex-street Schools.

G. R. Lockyer .. £161 18 | Gates & Sons, 1, North-road, Brighton‡ 120 0
J. Barnden..... 139 0

Municipal School of Science and Technology, Richmond-terrace, Brighton.

J. Barnden £63 10 6
F. Geering & Sons..... 58 0 0
G. R. Lockyer, King-street, North-street‡ 52 13 0
Gates & Sons 49 10 0
S. Worsley & Co. 47 12 0

Circus-street School.

J. Barnden ..... £265 | Gates & Sons, 1, North road, Brighton‡.... £189
F. Geering & Sons .. 235
R. G. Lockyer 199

Lewes-road School, and Ditching-road Cookery School.

G. R. Lockyer .. £99 10 | F. Geering & Sons, 78, London-road, Brighton‡..... £78 10
J. Barnden 88 10
Gates & Sons 79 0

No. 16, *Dean-street, Brighton.*

G. Lynn & Sons £25 0 0 | Gates & Sons, 1, North-road, Brighton‡.... £13 15 0
G. R. Lockyer.. 19 18 6
Sattin & Evershed 19 0 0

York-place Higher Grade School.

Sattin & Evershed .. £261 | J. Barnes & Sons, 99, North-st., Brighton‡ £225
G. Lynn & Son 241

York-place Higher Grade School (Limewhiting Ducts).

H. Haycox £4 0
Gates & Sons, 1, North-rd., Brighton‡.. 3 15

[‡ Recommended for acceptance.]

BARKING.—For erecting Baptist Tabernacle. Messrs. G. Baines & Son, architects, 5, Clement's-inn, Strand, London, W.C.:—

Builders' Estimates.	Higgs & Hill.	Holliday & Greenwood.	C. North.	Battley, Sons, & Holness.	Sands & Burley.*
	£	£ s.	£ s.	£	£ s.
A	2,140	1,672 0	1,656 0	1,487	1,400 0
B	28	16 0	24 10	15	13 5
C	23	16 15	40 0	10	15 4
D	344	270 0	271 0	247	241 0
E	284	237 0	230 0	215	241 6
F	148	133 0	142 0	132	139 0
G	19	20 0	17 0	18	18 0
H	40	31 0	40 0	34	23 7
I	32	26 0	30 0	29	30 8
Less if one month longer were allowed	30	Nil.	50 0	Nil.	10 0

* Accepted with modifications.

BRYNMAWR.—For alterations, etc., at the Police-station, for the Standing Joint Committee of the County of Brecon. Mr. C. W. Best, County Surveyor, County Hall, Brecon. Quantities by Mr. J. R. Wilkins, 137, High-street, Oxford:—

R. Edwards ..	£1,853 5 4	J. Jenkins,	
Gwatkin Bros.	1,784 2 0	Brynmawr*	£1,770 0 0

BYFIELD.—For erecting new Council school, for the Northamptonshire Education Committee. Messrs. Law & Harris, architects, 1, Sheep-street, Northampton:—

J. F. Booth	£2,825	F. G. Watson	£2,420
J. Guttridge	2,690	E. Archer	2,379
T. Kench	2,661	G. W. Sowster	2,353
C. Wright	2,650	A. J. Chown	2,350
G. Henson & Son	2,595	Kettering Co-operative Builders	2,335
S. Pipwell & Co.	2,500	G. Fisher	2,287
H. Martin	2,484	T. Higgs, Northampton†	2,280
Hacksley Bros.	2,429		
W. Heap	2,422		

CARDIFF.—For the erection of new mission hall with vestries and classrooms at the Heath, for the Rev. J. Pugh, D.D. Messrs. Veall & Sant, architects:—

Ransom	£4,711 5 4	W. Symonds & Co.	£3,761 19 0
F. Bond	4,170 0 0	E. R. Evans & Bros.	3,645 0 0
J. E. Evans	3,930 0 0	W. T. Morgan	3,500 0 0
J. Allan & Son	3,900 0 0	T. Bevan	3,485 7 0
D. Davies	3,886 0 0	Knox & Wells*	3,443 0 0
G. Hallett	3,820 0 0		
Melhuish Bros.	3,798 18 0		

[All of Cardiff, except T. Bevan, Penarth].

DEVONPORT.—For roadworks, lane between Evelyn and Kathleaven-streets, and rear of Victoria-road (Contract No. 79), for the Corporation. Mr. J. F. Burns, Borough Surveyor, Municipal Offices, 29, Ker-street, Devonport:—

J. F. Donne	£135 5 9½	Jefford & Sons	£136 0 7½
E. L. F. Duke	133 13 4	Pethick Bros.,	
F. Doney	133 5 9	Plymouth*	128 16 0

DEVONPORT.—For roadworks, Warleigh-avenue (Section 2, Contract No. 83), for the Corporation. Mr. J. F. Burns, Borough Surveyor, Municipal Offices, 29, Ker-street, Devonport:—

J. F. Donne	£422 11 9	F. J. Stantury	£344 10 2
Pearce Bros.	377 11 0	E. L. F. Duke	343 16 10
Steer & Pearce	373 3 0	F. Doney,	
Jefford & Sons	354 17 2	Devonport*	323 8 4

DEVONPORT.—For roadworks, road from Victoria-road to south end of Edith-street (Contract No. 84), for the Corporation. Mr. J. F. Burns, Borough Surveyor, Municipal Offices, 29, Ker-street, Devonport:—

J. F. Donne	£255 10 7½	Hortopp Bros.	£213 4 7
Pearce Bros.	227 7 0	Jefford & Sons	207 14 9
Steer & Pearce	220 2 0	F. Doney,	
E. L. F. Duke	216 8 1	Devonport*	195 16 3

DEVONPORT.—For roadworks, lane between St. Michael-avenue and section 2 of St. Aubyn-avenue (Contract No. 86), for the Corporation. Mr. J. F. Burns, Borough Surveyor, Municipal Offices, Devonport:—

Steer & Pearce	£150 13 3	E. L. F. Duke	£125 14 8
Jefford & Sons	134 3 0	Pethick Bros.,	
J. F. Donne	132 16 1	Plymouth*	121 0 6
F. Doney	125 18 6		

DEVONPORT.—For roadworks, Kathleaven-street, (Contract No. 74), for the Corporation. Mr. J. F. Burns, Borough Surveyor, Municipal Offices, 29, Ker-street, Devonport:—

J. F. Donne	£198 8 1½	F. Doney	£166 12 1
Steer & Pearce	177 16 9	Jefford & Sons	165 7 6
E. L. F. Duke	175 14 1	Pearce Bros.,	
Hortopp Bros.	171 13 4	Plymouth*	163 14 0

DEVONPORT.—For roadworks, lane rear of No. 1 to No. 9, Lynher-terrace, Victoria-road, and north of Lynher-street (Contract No. 77), for the Corporation. Mr. J. F. Burns, Borough Surveyor, Municipal Offices, 29, Ker-street, Devonport:—

Hortopp Bros.	£69 0 1	J. F. Donne	£59 3 0
Jefford & Sons	64 4 2	Pethick Bros.,	
E. L. F. Duke	62 5 0	Plymouth*	58 18 8
F. Doney	60 5 6		

DEVONPORT.—For roadworks, Tamar-avenue, (Contract No. 58), for the Corporation. Mr. J. F. Burns, Borough Surveyor, Municipal Offices, 29, Ker-street, Devonport:—

J. F. Donne	£477 13 0	Steer & Pearce	£392 17 0
Pearce Bros.	416 17 9	Jefford & Sons	377 4 2½
E. L. F. Duke	411 7 10	F. Doney,	
F. J. Stanbury	406 7 5	Devonport*	370 0 10

DEVONPORT.—For roadworks, Lynher-street (Contract No. 76), for the Corporation. Mr. J. F. Burns, Borough Surveyor, Municipal Offices, 29, Ker-street, Devonport:—

J. F. Donne	£150 17 1	Jefford & Sons	£128 6 10
Steer & Pearce	134 7 3	Pearce Bros.	125 12 0
E. L. F. Duke	133 15 0	F. Doney,	
Hortopp Bros.	129 10 8	Devonport*	123 4 4

DEVONPORT. — For roadworks, lane between Lynher and Evelyn-streets, and rear of Nos. 41 to 60, Victoria-road (Contract No. 78), for the Corporation. Mr. J. F. Burns, Borough Surveyor, Municipal Offices, 29, Ker-street, Devonport.

Jefford & Sons	£192 9 11	Pethick Bros.	£183 9 9
E. L. F. Duke	190 15 0	J. F. Donne,	
F. Doney	189 2 3	Devonport*	177 19 10

DEVONPORT. — For roadworks, Evelyn-street, (Contract No. 75), for the Corporation. Mr. J. F. Burns, Borough Surveyor, Municipal Offices, 29, Ker-street, Devonport:—

J. F. Donne	£192 13 4	Jefford & Sons	£160 3 7
Steer & Pearce	169 4 3	Pearce Bros.	156 13 0
E. L. F. Duke	166 1 2	F. Doney,	
Hortopp Bros.	162 6 7	Devonport*	152 0 0

ERDINGTON.—For erecting a new pavilion for male inmates, a chapel, etc., at the workhouse, for the Aston Guardians. Messrs. C. Whitwell & Sons, architects, 23, Temple-row, Birmingham:—
W. Lee & Son, Avenue-road, Aston Manor* .. £10,599

FRASERBURGH (N.B.).—Accepted for erecting semi-detached houses, King Edward-street, for Messrs. T. Chalmers & Chapman. Mr. W. S. F. Wilson, architect, Broad-street, Fraserburgh:—

Mason: G. Fraser	£365 0 0
Carpenters: Brebner & Jenkins	293 13 0
Slater: A. Thomson	54 0 0
Plumbers: R. Tindall & Sons	107 11 7
Plasterer: A. Campbell	85 0 0
Painter: W. Stuart	36 0 0

[All of Fraserburgh.]

HANDSWORTH.—For paving works, Hamstead-road and Birchfield-road, for the Urban District Council. Mr. H. Richardson, Engineer and Surveyor, Council House, Handsworth, Birmingham:—

S. Wood	£2,009 15 3	Currall, Lewis, & Martin	£1,741 0 0
Fitzmaurice & Co.	1,910 3 8	A. Cooper	1,598 11 6
G. Law	1,894 12 0	Sutherland & Thorpe, Smethwick*	1,510 2 1
H. Burnham	1,781 12 0		

[Engineer's estimate, £1,910 12s. 10d.]

HOLLINGBOURN (Kent).—For laying 630 ft. of iron pipes and fixing hydrants at Workhouse, for the Guardians:—

E. T. Willmore	£149 10 0	M. Batchelor	£90 0 0
C. Watson & Co.	124 10 0	C. T. Bresley	85 6 8
H. J. Smith & Son	102 0 0	G. H. Edmed	84 15 0
		M. Webb	78 7 6
Dennis, Paine, & Co.	96 0 0	Elmore & Son, Maidstone*	73 10 0
E. T. Jeffery	94 0 0	H. Goodwin	70 0 0

HORSHAM.—For redraining Workhouse and premises, for the Guardians. Mr. C. H. Burstow, architect, 6, West-street, Horsham:—
Potter Bros., Builders, Horsham..... £655

HOVE.—For additions to No. 74, The Drive, Hove, for Captain John Rose Auldjo. Mr. R. Owen Allsop, architect:—
E. Winter*..... £1,180 15

HULL.—For the erection of wood and glazed partitions in a number of schools, for the Education Committee:—

Sliding Portions—Thirteen Schools.
North of England School Furnishing Co., Darlington £147 6 2

Fixed Portions—Two Schools.
G. Harrison, Hull 65 2 0

Fixed Portions—Three Schools.
G. Jackson & Sons, Hull 75 7 6

IPSWICH.—Accepted for painting and decorating Council Schools, for the Education Committee. Mr. E. T. Johns, Architect, Cornhill-chambers, Ipswich:—

INSIDE PAINTING, COLOURING, ETC.

Wherstead-road Boys' and Girls' Council Schools.
A. C. Harding, Ipswich £79 10

Smart-street Council School and Handicraft Centre.
Crisp & Smith, Ipswich..... £49 10

Bramford-road Council School.
Sergeant & Son, Ipswich £50

Rose Hill Council School.
Boyce & Sons, Ipswich £68 15

Higher Elementary Council School.
A. C. Harding, Ipswich £145 17 6

OUTSIDE PAINTING.

Wherstead-road Boys' and Girls' Council Schools.
Crisp & Smith, Ipswich £14 10

Argyle-street Council School.
A. Stopher, Ipswich..... £9 15

California Council School.
Crisp & Smith, Ipswich £6 10

Britannia-road Council School.
A. Stopher, Ipswich £14 10

Offices, Pupil Teachers' Centre and Cookery Centre.
Boyce & Sons, Ipswich £14 5 5

JARROW.—For alterations and additions to the Bede Burn and Grange Council schools, for the Education Committee. Mr. Adam, clerk of works. Quantities by Mr. J. Savage, Newcastle:—

Bede Burn Council School, Jarrow.
Glen & Moffett, Back Queen's-road, Jarrow* £2,756 3 5

Grange Council School, Jarrow.
W. Cowper, Back Railway-street, Jarrow*.. £585 10 0

LEYTONSTONE.—For alterations and additions to the board-room and offices at the Workhouse, Union-lane, for the Guardians of the West Ham Union. Mr. J. Williams Dunford, architect, 100c, Queen Victoria-street, London, E.C.:—

		Alternative Work.
Shurmur & Sons	£7,821	£676
Newell & Lusty	7,400	550
J. & W. Inkpen	7,150	540
H. C. Horswill	6,967	510
Gregar & Son	6,333	626
Fuller & Son	5,935	604
W. Maddison	5,821	560
Sands & Burley	5,598	479
F. J. Coxhead	5,293	540
Patman & Fotheringham	5,224	703
W. Manders, Leyton	*4,961	664

[Architect's estimate, £5,250 and £500.]

LONDON.—For wiring for electric light installation at workhouse and infirmary, Wormwood Scrubbs, for Hammersmith Board of Guardians. Messrs. J. & J. S. Enright, engineers, 68, Lincoln's Inn-fields, W.C.:—

Electric Wiring.
W. J. Fryer & Co., Bravington Works, Paddington* £4,580

Transforming Apparatus.
W. J. Fryer & Co., Bravington Works, Paddington* £1,061

LONDON.—For repairs, painting, and other works at the Public Garden and urinals, for Islington Borough Council. Mr. J. Patten Barber, Borough Engineer, Town Hall, Upper-street, N. Quantities by Engineer:—

	Public Gardens.	Public Urinals.
Brav & Co.	£837 17 0	£259 10 7
H. R. Brown	844 18 0	401 16 6
F. W. Harris & Co., Ltd.	648 17 7	318 10 9
J. F. Holliday	623 6 0	275 0 6
C. & W. Hunnings	546 4 6	294 15 3
R. Isles, Ltd.	552 1 7	—
J. Johnson	606 14 9	307 7 0
Markham & Markham	1,039 16 6	329 19 0
R. Metcalf & Son	585 17 8	—
R. E. Metcalf	512 4 10	288 4 0
G. A. Rowley	585 18 7	—
Stevens Bros.	569 11 0	271 12 0
Victoria Sanitary Engineering Co., Victoria-street, S.W.	*478 16 1	*164 3 3

LONDON.—For laying mastic asphalte on the footway on the south side of Newington Green, for the Islington Borough Council. Mr. J. Patten Barber, Borough Engineer, Town Hall, Upper-street, N.:—

Rowland, Carr, & Co.	£272 17 6
Asphaltic Limestone Concrete Co., Ltd.	266 15 7
Limmer Asphalte Paving Co.	251 9 6
International Asphalte Co.	245 15 0
Val de Travers Asphalte Paving Co., Ltd.	243 6 0
French Asphalte Co., Ltd.	243 1 3
T. Faldo & Co., Ltd.	242 5 7
Trinidad Lake Asphalte Paving Co., Ltd.	240 5 3
London Asphalte Co., Ltd.	238 2 7
Brunswick Rock Asphalte Paving Co.	228 12 10
Bradshaw & Co.	228 8 4
J. Smart & Son	227 4 2
Grounds & Newton, South Tottenham*	192 19 6

LONDON.—For constructing conveniences and a caretaker's lodge at the playground, Morton-road, N., for the Islington Borough Council. Mr. J. Patten Barber, Borough Engineer, Town Hall, Upper-street, N.:—

B. E. Nightingale	£366 0 0	C. Castle & Son	£293 4 8
G. Wade	358 0 0	Stevens Bros.	293 0 0
J. Johnson	354 10 0	H. Kent	292 0 0
G. F. Holliday	348 18 5	Victoria Sanitary Engineering Co.	291 2 6
General Builders, Ltd.	339 0 0	F. H. Pearse	290 0 0
A. G. Crisp	318 0 0	S. Kind, 564, High-road, Leytonstone*	263 10 0
Mattock & Parsons	297 0 0		

LONDON.—For electric lighting, hot-water heating, terrazzo paving, etc., at the Hilda-road School, Canning Town, for the West Ham Education Committee. Mr. W. Jacques, architect, 2, Fen-court, Fenchurch-street, E.C.:—

Hot-water Heating Apparatus.
Brightside Engineering Co., Westminster* .. £487

Terrazzo Paving.
British Mosaic Co., London*..... £137 18 0
[No tender accepted yet for electric lighting]

LONDON.—For paving with asphalte the carriageway of America-square, E.C., for the Corporation of London:—
London Asphalte Co.* £564 10

LONDON.—For paving with asphalte the footways of Aldgate, for the Corporation of London:—
London Asphalte Co.*..... £107 1 4

LONDON.—For proposed factory premises at Crofton Park-road, London, S.E., for Messrs. Alfred Graham & Co. Messrs. Bingham & Broughton, architects, Crofton Park, S.E. Quantities by Mr. T. Arthur Lewis, Croydon:—

F. Ward & Sons	£7,466	J. Smith & Sons, Ltd.	£6,671
J. Burke	7,234	Thomas & Edge	6,666
Courtney & Fairbairn	7,089	T. D. Leng	6,560
Perry Bros.	6,977	H. L. Holloway	6,500
Longley & Co.	6,945	B. E. Nightingale	6,444
A. W. Jaggers & Co.	6,900	Edwards & Medway	6,429
Ashby Bros.	6,879	W. H. Hyde	6,400
Kennard Bros.	6,800	W. Nash	6,275
Holloway Bros., Ltd.	6,793		

TENDERS.—*Continued on Page* 141.

COMPETITION AND CONTRACTS.

(For some Contracts, etc., still open, but not included in this List, see previous issues.)

COMPETITION.

Nature of Work.	By whom Required.	Premiums.	Designs to be Delivered
*PLANS, ETC., PUB. SCHLS., ADLINGTON, ETC.	Cheshire C.C. Education Committee	Not stated	Aug. 26

CONTRACTS.

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, etc., supplied by	Tenders to be Delivered
125 tons of Wrought Iron	Bengal and N.W. Railway Co.	A. Izat, 237, Gresham-house, Old Broad-street, E.C.	July 31
Sewerage Works, Dunham Massey	Bucklow R.D.C.	J. P. Wilkinson, Engineer, 301, Cathedral-street, Manchester	Aug. 1
Water Supply, Inveraven School	.....	C. C. Doig, C.E., Elgin	do.
Paving, Park-terrace, Tynemouth	Corporation	J. F. Smillie, Borough Surveyor, Tynemouth	do.
Decoration and Screen at Union Offices, Isleworth	Brentford Guardians	W. Stephens, Clerk, Union Offices, Isleworth	do.
Furniture and Fittings, Carnegie Library, Harrogate	Harrogate Corporation	J. T. Taylor, Town Clerk, Municipal Offices, Harrogate	do.
Carting Work for Two Years at Gasworks	Halifax Gasworks Committee	J. Wilkinson, Engineer, Gasworks, Halifax	do.
*OFFICE FURNISH., ETC., H. OF O., EUSTON-RD.	Building Committee	Chairman, Build. Com., Hearts of Oak Benefit Soc., Fitzroy-sq., W.	do.
House, Hengoed	Mr. H. B. Pittway	P. Vivian Jones, Architect and Surveyor, Hengoed	Aug. 2
Coal Wagons and Brake Vans	East Indian Railway Co.	C. W. Young, Secretary, Nicholas-lane, London, E.C.	do.
Rebuilding Gateway & Paving, Crumpsall Workhouse	Manchester Guardians	A. J. Murgatroyd, Architect, 23, Strutt-street, Manchester	do.
900 lin. yds. Unclimb. Iron Fencing, Prestwich Clough	Prestwich U.D.C.	W. Nuttall, Engineer, Council Offices, Chester-bank, Prestwich	do.
Timber, etc.	Manchester Cleansing Committee	R. Williamson, Town Hall, Manchester	do.
Skewen Sewerage (Contract No. 2)	Neath R.D.C.	W. E. Clason Thomas, Engr., Council Offices, Orchard-st., Neath	do.
Broken Stone	Kingstown U.D.C.	Town Surveyor, Town Hall, Kingstown, Ireland	do.
Ventilation Works at Arthur's-hill Council School	Newcastle-on-Tyne Education Com.	A. Goddard, Sec., Educa. Offices, Northumberland-rd., Newcastle	do.
Street Works, Castleford	Castleford U.D.C.	H. H. Broadbent, Clerk, U.D.C. Offices, Castleford	Aug. 3
Extension of Laundry Premises	Rotherham Guardians	H. L. Tacon, Architect, 11, Westgate, Rotherham	do.
Additions to Isolation Hospital	do.	do.	do.
Painting Outside of Workhouse Premises	Belper Guardians	Workhouse Master	do.
Paving at Dunston	Whickham U.D.C.	J. B. Renton, Surveyor, Council Offices, Whickham	do.
Repairs in Scullery and Yard of Workhouse	King's Lynn Guardians	Jarvis & Sons, Architects, Paradise-parade, Lynn	do.
*NEWS. STDS., ETC., CEN. LIB., WOOLWICH-RD.	Metropolitan Boro. of Greenwich	Town Clerk, Town Hall, Greenwich, S.E.	do.
Making-up Roads, Chorlton and Whalley Range	M'chester Corp. (Withington Com.)	Surveyor to the Committee, Town Hall, West Didsbury	Aug. 4
Olive Grove Depot Painting, etc.	Sheffield Highway, etc., Commitee	C. F. Wike, City Surveyor, Town Hall, Sheffield	do.
North Sea Outrage Commemorative Statue	.....	A. Silk, Secretary, 244, St. George's-road, Hull	do.
Excavating and Brickwork, near Rough Castle Siding	Scottish Fish Oil, etc., Co.	Carmichael & Sharman, Engineers, 14, Queen-street, Edinburgh	do.
Alterations to Dinaw Chapel, Nantymoel	.....	W. Beddoe Rees, Architect, 3, Dumfries-place, Cardiff	do.
School and Classrooms, Nantymoel	.....	do.	do.
Southwold Sea Defence Works	Town Council	A. E. Carey, Engr., Westminster-chbrs., 3, Victoria-st., Westminster	do.
Asphalting & Alterations, Wath-upon-Dearne School	West Riding Education Committee	J. Vickers Edwards, County Architect, County Hall, Wakefield	Aug. 5
Nine Houses at Ynysboeth, near Abercynon	Miners' Homes, Land, etc., Co.	T. W. Jones, Cynon-chambers, Abercynon	do.
Roofing of Bar and Erecting Piggery at Tregassow	Right Hon. Viscount Falmouth	G. Gow, Tregothnan Office, Truro	do.
Cloakroom, etc., Penrhiwceiber School	Mountain Ash Education Committee	Surveyor's Office, Town Hall, Mountain Ash	do.
Renovating, Painting, etc., Newtown School	do.	do.	do.
Painting, etc., Darranlas Infant School	do.	do.	do.
Painting, etc., Navigation School, Abercynon	do.	do.	do.
110 yds. of 12-in. Sewer, etc., at Backworth	Earsdon U.D.C.	J. R. MacMillen, Shiremoor	do.
600 yds of 3-in. Water Mains	do.	do.	do.
School, Upperthorpe	Sheffield Education Committee	H. L. Paterson, Architect, 19, St. James's-street, Sheffield	do.
Villa Grant-street, Elgin	.....	R. B. Pratt, Architect, Town and County Bank-buildings, Elgin	Aug. 7
*ALTERATIONS TO LINGFIELD SCHOOL	Surrey Education Committee	Jarvis & Richards, 36, Victoria-street, Westminster, S.W.	do.
Nursery, etc., at Workhouse	Newton Abbot Guardians	S. Segar, Architect, Union-street, Newton Abbot	Aug. 8
Birmingham and North Warwickshire Railway	Great Western Railway Co.	New Works Engineer, Paddington Station	do.
Stores	Stretford Gas Co.	H. Kendrick, Gas Engineer, Stretford	do.
Heating Apparatus at Rhodes School	Middleton Corporation	W. Welburn, Borough Surveyor, Town Hall, Middleton	do.
Painting & Decorating Council Chamber, Town Hall	Kingstown U.D.C.	Town Surveyor, Town Hall, Kingstown, Ireland	do.
Alterations, etc., to Borough Police-station, etc.	Glossop Corporation	R. G. Hawke, Architect, Norfolk-square, Glossop	do.
Bank Premises, Portumna, Co. Galway	.....	W. H. Byrne & Son, Architects, 20, Suffolk-street, Dublin	do.
*FIRE STAT'N & READING-RM., HAMPTON HILL	Hampton U.D.C.	Council Surveyor, Public Offices, Hampton, Middlesex	do.
*CHAPEL, ETC., IN SHEEN-ROAD CEMETERY	Barnes U.D.C.	R. B. Rowell, Architect, Triangle Corner, East Sheen, Surrey	do.
*CONCRETE TUBE, SEWER, ETC.	Chiswick U.D.C.	Council's Surveyor, Town Hall, Chiswick, W.	do.
Paving Works, etc.	Litherland U.D.C.	A. H. Carter, Surveyor, Public Offices, Sefton-road, Litherland	Aug. 9
Additions, Middleton Cheney Schools	The Managers	W. J. Treadwell & Son, Architects & Surveyors, Middleton Cheney	do.
Boilers, Economiser, etc.	South Dublin Guardians	J. H. Ryan, Engineer, 22, Nassau-street, Dublin	do.
Boiler-house, etc.	do.	do.	do.
Alterations to Soar Welsh Con. Chapel, Clydach Vale	The Trustees	R. S. Griffiths, Architect and Surveyor, Tonypandy	do.
Mixed School at Hemsworth, near Wakefield	West Riding Education Committee	W. E. Richardson, Architect, Rothwell, Leeds	do.
Water Mains, etc.	Braintree U.D.C.	H. H. Nankivell, Surveyor, Vestry Hall, Braintree	do.
Sewage Pumping Machinery	Fleetwood U.D.C.	G. R. Strachan, M.Inst.C.E., 9, Victoria-street, Westminster	Aug. 10
Painting, Distempering, etc., Concert Hall	North Camberwell Liberal Club	C. Reuter, 45, Albany-road, S.E.	do.
Making-up Part of Holden-road	Finchley U.D.C.	Engineer, Council Offices, Church End, Finchley	do.
Shop and Warehouse at Queensbury	The Economic Stores	Jackson & Fox, Architects, Rawson-street, Halifax	Aug. 11
Supply of Water Mains	Droitwich Borough Council	H. Hulse, Borough Surveyor, Droitwich	do.
Excavating and Laying Water Mains	do.	do.	do.
Engine House, etc., Ripponden Mills, near Halifax	Stamford Town Council	C. F. L. Horsfall & Son, Architects, Lord-st.-chambers, Halifax	Aug. 12
400 tons of Broken Granite, etc.	Borough of Ryde	F. R. Ryman, Borough Surveyor, 8, St. Mary's-street, Stamford	do.
*NEW COTTAGES, ETC., AT WATERWORKS	Hendon U.D.C.	Borough Engineer, Town Hall, Ryde	do.
*PAINTING SEWER DUCT AND VENTILATORS	do.	Council's Engineer, Council Offices, The Burroughs, Hendon, N.W.	Aug. 14
*EXCAVATING AND BURNING FILTER BEDS	do.	do.	do.
*PLASTERING WALLS OF CONT. FILTER BEDS	Brumby and Frodingham U.D.C.	do.	do.
*CONCRETE AND STEEL SERVICE RESERVOIR	Surrey Education Committee	A. Atkinson, Engineer, Brigg	do.
*NEW SCHOOL AT MAYBURY, WOKING	Lambeth Guardians	Jarvis & Richards, 36, Victoria-street, Westminster, S.W.	do.
*SANITARY WORK BROOK-ST. INFIRMARY	Minehead & Williton Dis. Hos. Com.	Clerk to the Guardians, Offices, Brook-st., Kennington-road, S.E.	Aug. 15
*ISOLATION HOSPITAL AT MINEHEAD	Clare R.D.C.	Clerk to the Committee, 18, The Avenue, Minehead, Somerset	do.
Sinking Borehole	Visiting Committee, Bromsgrove	Sands & Walker, Engrs., Milton-chbrs., Milton-st., Nottingham	Aug. 16
Sewage Disposal Works, Barnsley Hall Asylum	Down District Lunatic Asylum	Willcox & Raikes, Engineers, 63, Temple-row, Birmingham	Aug. 17
House for Land Steward	do.	S. Rea, Clerk, Downpatrick	Aug. 18
Additions, etc., to Asylum Sewerage System	Skipton Cattle Market, Ltd.	do.	do.
*SKIPTON CATTLE MARKET	Barnet U.D.C.	J. M. Broughton, Architect, 19, High-street, Skipton	do.
*STREET WORKS, FITZJOHN'S-AVENUE	.....	Council's Surveyor, 40, High-street, Barnet	Aug. 19
*RDS. & SEWERS, MANOR ESTATE, LR. TOOTING	Warrington Fire Engine Committee	H. R. G. S. Smallman, Architect, 8, Queen-street, Cheapside, E.C.	Aug. 23
Horse Fire Escape, Engine, and Hose Carriage	Agent-General for Natal	T. Longdin, Borough Engineer, Town Hall, Warrington	Aug. 28
Stuartstown Railway Contract	Southampton Corporation	W. Arbuckle, Agent-General, 26, Victoria-street, Westminster	Aug. 31
Paving Stone	do.	J. A. Crowther, Boro. Engr., Mkt.-chbrs., 123, High-st., S'hampton	Sept. 4
Pumping Engines	Ipswich Education Committee	do.	do.
Clifford-road Council School	Bishop's Stortford U.D.C.	E. T. Johns Architect, Thoroughfare, Ipswich	Sept. 11
Pumping Engines at Sewage Pumping Station	Humber Com. Rv. & Dock Co. Ders.	T. Swatheridge, 7, North-street, Bishop's Stortford	Sept. 12
*CONSTRUCT., NEW DOCK, ETC., IMMINGHAM	East Suffolk Education Committee	Sir J. Wolfe Barry & Partners, 21, Delahay-st., Westminster, S.W.	Sept. 20
Enlargement of Somersham Council Schools	Very Rev. T. Casey	G. W. Leighton, Architect, Prince's-street, Ipswich	Sept. 26
Works at Dunderry Church, Co. Meath	Mr. C. D. Venables Llewellyn	W. H. Byrne & Son, Architects, 20, Suffolk-street, Dublin	No date.
House, Newbridge-on-Wye, Radnorshire	.....	W. Scott Deakin, Architect, Pride Hill, Shrewsbury	do.
Alterations to Junction Hotel, Wyke	Plas-road Building Club	J. Jackson, Architect, Barry-street, Bradford	do.
Twenty Houses at Fleur-de-Lis	.....	C. Telford Evans, Architect, 8, Queen-street, Cardiff	do.
Additions, etc., to Victoria Hotel, Woodhall Spa	.....	W. Mortimer & Son, Architects, Lincoln	do.
St. Peter's Schools, Leeds-road	Messrs. W. Brooks & Sons	E. Simpson, Architect, 12, Cunliffe-terrace, Manningham	do.
Barley Drying Kiln, The Hythe, Colchester	National School Managers	J. W. Start, F.S.I., Colchester	do.
Additions, etc., to School Buildings, Brixton	Staffordshire C.C. Education Com.	King & Lister, Archts. & Surveyors, 8, Princess-square, Plymouth	do.
*INF. SCH. AT BROWNHILLS, WALSALL WOOD	.....	Education Committee Offices, Stafford	do.
*TEN SMALL VILLAS		W. C. Poole, Architect, Prested-road, Clapham Junction	do.

Those marked with an asterisk (*) are advertised in this number. *Competitions*, iv. *Contracts*, iv. vi. viii. x. *Public Appointments*, —.

TENDERS.—*Continued from page* 139.

LONDON.—For Battersea, Clapham, Streatham, and Wandsworth sub-stations, high and low-tension switch-gear, for the London County Council :—

British Thomson-Houston Co., Ltd.	£13,178 6 0
British Westinghouse Electric and Manufacturing Co., Ltd.	12,705 7 0
Kelvin & J. White, Ltd.	12,335 6 0
Dick, Kerr, & Co., Ltd.	12,042 6 3
A. Reyrolle & Co.	11,421 19 0
Siemens Bros. & Co., Ltd.	10,568 10 0
Electric Construction Co., Ltd.	10,317 10 0
General Electric Co., Ltd., Manchester*	10,129 12 0
Edison & Swan United Electric Light Co., Ltd.	8,427 0 0

LONDON.—For Battersea and Wandsworth sub-stations, low-tension switchboards, for the London County Council :—

Baily, Grundy, & Barrett, Ltd.	£3,148 5 6
Kelvin & J. White, Ltd.	2,853 9 6
British Thomson-Houston Co., Ltd.	2,701 14 0
Walsall Electrical Company, Ltd.	2,564 4 6
A. Reyrolle & Co., Ltd.	2,382 9 6
Siemens Bros. & Co., Ltd.	2,344 0 0
Consolidated Electrical Co., Ltd.	2,226 0 0
C. Hodges & Co.	2,157 14 0
British Westinghouse Electric and Manufacturing Co., Ltd.	2,101 1 0
B. Thomas	2,055 18 6
Electric Construction Co., Ltd.,	2,053 16 0
J. E. Spagnoletti & Co.	2,008 10 0
L. Robinson & Co.	1,982 18 0
General Electric Co., Ltd.	1,855 7 6
J. G. Statter & Co.	1,732 9 0
J. Fowler & Co. (Leeds), Ltd.	1,732 0 0
Edison & Swan United Electric Light Co., Ltd.	1,439 16 3
Evered & Co., Ltd., Birmingham*	1,347 10 0

LONDON.—For cleaning and painting works at Tooting Bec Asylum, Tooting, S.W., for the Metropolitan Asylums Board. Mr. W. T. Hatch, Engineer-in-Chief :—

W. Johnson & Co., Ltd.	£190 0 0	J. & M. Patrick	£158 0 0
M. Batchelor	189 0 0	W. A. King	133 0 0
Robert Iles, Ltd.	169 4 7	J. S. Fenn	129 15 0
E. Proctor & Son	168 0 0	W. J. Simms & Sons	125 0 0
H. Kent	166 0 0	F. Kinnaird	120 0 0
E. Swan & Son	160 0 0	E. Wall	102 0 0
C. E. Gibbings & Co.	158 0 0	L. Kazak, 3 & 4, Station-road, Belvedere*	95 0 0

LONDON.—For work at St. George-the-Martyr Churchyard, Long-lane and Tabard-street, for the London County Council :—

Provision and Erection of Railings, etc.

Bostwick Gate and Shutter Co., Ltd.	£465 0 0
R. Carr & Co.	448 15 0
G. Wragge, Ltd.	433 0 0
Lockerbie & Wilkinson, Ltd.	398 0 0
Hill & Smith, London and Brierley Hill*	273 7 3

For the Erection of the Boundary Wall, etc.

W. J. Coleman & Co.	£693 15 2
Griggs & Son	649 5 11
T. Pearce	618 7 6
Sycamore Works, Ltd.	612 19 0
Martin, Wells, & Co., Ltd.	589 0 0
H. C. Payne	564 0 0
W. Downs	559 0 0
C. R. Price	558 0 0
F. & G. Foster, London*	549 0 0

LONDON.—For cleaning and painting works at the Fountain Fever Hospital, The Grove, Tooting, S.W., for the Metropolitan Asylums Board. Mr. W. T. Hatch, Engineer-in-Chief :—

H. Hussey	£247 0 0	E. Wall	£175 0 0
W. Johnson & Co., Ltd	232 0 0	W. J. Simms & Sons	150 0 0
E. Swan & Son	230 0 0	J. S. Fenn	128 0 0
E. Proctor & Son	208 0 0	L. Kazak, 3 & 4, Station-road, Belvedere*	120 0 0
R. Iles, Ltd.	205 4 6		
W. A. King	205 0 0		
H. Kent	199 0 0		

LONDON BOARD OF EDUCATION TENDERS.

PAINTING OF SCHOOLS DURING THE SUMMER HOLIDAYS.

Bethnal Green, N.E., Columbia-road (Painting Interior and Exterior).

W. Sayer & Son	£695 0	Woollaston Bros.	£606 10
Killby & Gayford	657 0	J. Haydon & Sons*	562 12
Vigor & Co.	620 0	Langdon & Clark	560 0
H. Bouneau	620 0		

Bow and Bromley, Smeed-road (Painting Interior and Exterior).

Barrett & Power	£721	W. Silk & Son	£577
A. E. Symes	686	H. Bouneau	520
A. W. Derby	620	R. Woollaston & Co.	514
Langdon & Clark	600	J. Chessum & Sons, Monier-road, Bow*	438
Vigor & Co.	589		

Peckham, Sumner-road (Painting Interior of Main School, and Cleaning Interior of P.T. Centre).

T. G. Sharpington	£908 0	E. Proctor & Son	£550 0
H. Line	777 0	Holliday & Greenwood, Ltd., Brixton*	£533 0
W. Sayer & Son	703 0		
Maxwell Bros., Ltd.	625 0		

Mile End, Single-street (Painting Interior and Exterior).

A. E. Symes	£680 0	Vigor & Co.	£475 0
A. W. Derby	550 0	J. Chessum & Sons	451 0
J. Haydon & Sons	535 10	Barrett & Power, St. Thomas' Wks., Hackney*	435 0
R. Woollaston & Co.	486 0		
H. Bouneau	480 0		

Stepney, Trafalgar-square (Painting Interior).

W. Shurmur & Sons, Ltd.	£787 0	Barrett & Power	£596 0
A. E. Symes	742 0	J. Chessum & Sons	589 0
Langdon & Clark	630 0	Woollaston Bros.	548 10
J. Haydon & Sons	630 0	R. Woollaston & Co., 22, Lacey-street, Bow*	529 0
Vigor & Co.	597 0		

Hampstead, New-end (Heating Apparatus).

Rosser & Russell, Ltd.	£648 10	R. Clarke	£510 0
Strode & Co.	587 0	Wontner-Smith, Gray, & Co.	505 0
Wippell Bros. & Row	563 10	J. Grundy	497 0
J. Yetton & Co.	560 0	B. Harlow & Sons	487 0
Wright Bros.	555 0	G. & E. Bradley, 68 and 70, Elfort-road, Highbury*	487 0
C. Kite & Co.	535 10		
R. H. & J. Pearson, Ltd.	535 0		

Brixton, Crawford-street (Alterations).

W. King & Son	£771 0	Holliday & Greenwood, Ltd.	£625 0
J. F. Ford	767 0	J. Garrett & Son	559 0
Maxwell Bros., Ltd.	757 0	W. V. Goad	559 0
Rice & Son	727 0	E. B. Tucker	466 0
T. Hooper & Son	698 0	W. J. Coleman & Co., Wynne-road, Brixton*	449 15
W. Downs	689 0		
J. Marsland & Sons	625 0		

Hackney, C. Stormont House Residential School for (Mentally Defective Blind Boys).

E. Lawrance & Sons	£270 0	G. S. S. Williams & Son	£179 0
J. Grover & Son	243 0	J. Stewart	178 0
T. L. Green	237 0	C. R. Price	170 0
W. Shurmur & Sons, Ltd.	225 0	L. H. & R. Roberts, 34, Rheidol-terrace, Islington*	159 0
Matlock & Parsons	198 0		
Stevens Bros.	184 15		

Kennington, Upper Kennington-lane (Heating Apparatus).

W. G. Cannon & Sons	£769 0	Stevens & Sons	£630 0
J. & F. May	669 0	J. Yetton & Co.	615 0
C. Kite & Co.	656 0	G. & E. Bradley	597 0
Whippell Bros. & Row	652 10	Wontner-Smith, Gray & Co., 81, Finsbury-pavement	569 10
The Brightside Foundry & Engineering Co., Ltd.	630 0		

Hammersmith, Ellerslie-road (Heating Apparatus).

Turner & Co.	£210	G. Davis	£190
J. Grundy	209	R. Clarke, 41, Featherstone-street*	160
Palowkar & Sons	197		

Southwark, W., Orange-street (Heating Apparatus).

W. Simmons	£166 0 0	J. Richmond & Co., Ltd.	£75 12 6
T. S. Knight & Sons	120 0 0	G. & E. Bradley	71 10 0
G. Davis	100 0 0	J. Yetton & Co.	69 10 0
J. Grundy	95 0 0	R. Clarke	64 0 0
W. G. Cannon & Sons	89 10 0	Stevens & Sons, Darlington Works, Southwark Bridge-road*	52 10 0
Palowkar & Sons	80 0 0		

Norwood, Elm-court Residential School for Blind Girls (Iron Staircases).

Merryweather & Sons, Ltd.	£168 18 0	Hayward Bros. & Eckstein, Ltd.	£107 15 0
G. Mills & Co.	160 0 0	Cadogan Ironworks	107 0 0
St. Pancras Iron Work Co.	134 0 0	F. A. Norris & Co.	97 17 6
McDowall, Steven, & Co., Ltd.	129 0 0	Wilmer & Sons, 11-14, Bury-street*	90 0 0
A. Ritchie & Co.	113 8 0	Pierson & Co.	85 17 0
F. A. Norris & Co. (alternative estimate)	111 0 0		

[Messrs. Pierson & Co., in filling up the schedule of wages, etc., state that they intend to pay smiths and fitters and erectors 8d. to 9d. per hour, and that the hours of labour would be 56 a week. The rates recognised by the Council for such workmen are 8½d. to 9½d. per hour, the hours of labour being 54 a week. The attention of the contractors has been drawn to the matter, and they have stated that they cannot agree to bind themselves under any penalty on account of their conditions of manufacture.]

Bow and Bromley, Monteith-road School (Alterations).

Parrott & Isom	£439	J. T. Robey	£345
Vigor & Co.	371	A. E. Symes, Carpenter's-road, Stratford*	275
F. & F. J. Wood	346		
J. Grover & Son	346		

LONDON.—For private street works (second batch), for the Finchley Urban District Council :—

Crescent-road.

		Alternative Price for other than Victoria Indurated Paving.
J. Jackson	—	£417 8 6
A. B. Champniss	—	410 13 4
Griffiths & Co.	—	394 8 2
S. Gibbon	—	382 13 6
Ballards, Ltd.	—	368 13 7
F. Fowles	£357 18 3‡	368 8 3
Kavanagh & Co.	—	367 16 4
T. Adams	—	346 2 5
Grounds & Newton	—	341 6 11
T. Free & Sons	—	331 8 3
Harvey Bros.	306 14 10§	324 16 6
H. B. Bowyer	—	316 7 2
W. Iles*	—	295 0 0

[Engineer's estimate (less lighting and contingencies), £393 17s. 5d.]

LONDON.—For private street works, for Finchley Urban District Council :—

Churchfield-avenue.

F. Fowles	1,452 17 2‡	£1,497 7 2
S. Gibbons	—	1,455 1 11
Griffiths & Co.	—	1,399 1 2
Ballards, Ltd.	—	1,377 4 9
J. Jackson	—	1,371 13 2
Kavanagh & Co.	—	1,361 13 7
A. B. Champniss	—	1,252 4 1
T. Adams	—	1,245 4 1
Grounds & Newton	—	1,192 6 5
T. Free & Sons	—	1,173 6 3
H. D. Bowyer	—	1,139 11 9
Harvey Bros.	1,017 3 10§	1,095 1 4
W. Iles*	—	1,085 0 0

[Engineer's estimate (less lighting and contingencies), 1,392 4s. 8d.]

LONDON.—For private street works, for Finchley Urban District Council :—

Mountfield-road.

J. Jackson	—	£1,460 9 7
S. Gibbon	—	1,363 5 6
Griffiths & Co.	—	1,353 1 9
F. Fowles	1,271 16 9‡	1,313 6 9
Kavanagh & Co.	—	1,299 18 4
R. Ballard, Ltd.	—	1,273 8 4
A. B. Champniss	—	1,231 1 4
T. Adams	—	1,191 10 2
Grounds & Newton	—	1,180 11 4
T. Free & Sons	—	1,125 10 5
Harvey Bros.	1,045 5 10§	1,118 15 10
H. D. Bowyer	—	1,046 5 5
W. Iles*	—	1,040 0 0

[Engineer's estimate (less lighting and contingencies), £1,339 13s. 5d.]

LONDON.—For private street works, for Finchley Urban District Council :—

Dollis Park.

J. Jackson	—	£2,530 0 0
Griffiths & Co.	—	2,514 19 8
Kavanagh & Co.	—	2,298 15 1
R. Ballard, Ltd.	—	2,287 6 7
A. B. Champniss	—	2,283 5 9
F. Fowler	2,201 1 9‡	2,277 1 9
S. Gibbon	—	2,263 12 6
Grounds & Newton	—	2,155 5 8
T. Adams	—	2,086 5 11
T. Free & Sons	—	1,958 8 10
Harvey Bros.	1,830 15 2§	1,932 19 4
H. D. Bowyer	—	1,920 11 5
W. Iles*	—	1,795 0 0

[Engineer's estimate (less lighting and contingencies), £2,456 18s. 2d.]

LONDON.—For private street works, for Finchley Urban District Council :—

Dollis-avenue.

J. Jackson	—	£3,820 9 4
Griffiths & Co.	—	3,601 3 6
F. Fowles	‡3,379 12 2	3,482 12 2
Kavanagh & Co.	—	3,297 0 8
R. Ballard, Ltd.	—	3,289 0 1
A. B. Champniss	—	3,262 7 5
S. Gibbon	—	3,221 12 1
Grounds & Newton	—	2,971 10 6
T. Adams	—	2,968 12 5
H. D. Bowyer	—	2,753 4 10
Harvey Bros.	§2,552 19 7	2,733 12 11
T. Free & Sons	—	2,723 1 3
W. Iles*	—	2,545 0 0

[Engineer's estimate (less lighting and contingences), £3,597 16s. 11d.)

‡ Granite flag stone paving. § Shap Granite Co's paving.

Iron Staircases at Schools, etc.

—	Brixton, Acre-lane. Home.	Clapham, Home for Little Boys, King's-rd.	Clapham, Linden Lodge, School for Blind.	Dulwich, Lyndhurst-Grove.	Hackney, S., Upton House Truant School.	Haggerston, Fellows-street, Temporary School.	Haggerston, Maidstone-street.	Islington, E., Highbury Truant.	Lewisham, Manor Mount High School.	Wandsworth, Waldron-road.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Hayward Bros. & Eckstein, Ltd.	61 15 0	132 0 0	32 10 0	106 0 0	63 0 0	70 5 0	54 15 0	38 10 0	59 0 0	73 0 0
Hayward Bros. & Eckstein, Ltd. (Alternative estimates.)	59 0 0	125 0 0	—	99 15 0	61 0 0	67 10 0	52 0 0	36 0 0	56 0 0	69 10 0
H. & S. Jones	83 0 0	—	59 15 0	—	—	—	79 15 0	50 16 0	78 0 0	—
McDowall, Steven, & Co., Ltd.	72 16 0	157 5 6	43 15 0	136 7 6	91 10 0	75 17 6	61 0 0	50 7 6	71 17 6	78 7 6
Merryweather & Sons, Ltd.	97 2 0	231 9 0	60 12 7	167 0 0	122 2 0	103 10 0	76 16 0	66 0 0	95 0 8	94 16 0
G. Mills & Co.	92 10 0	200 10 0	51 0 0	170 10 0	103 0 0	104 10 0	66 10 0	54 10 0	83 0 0	107 0 0
F. A. Norris & Co., 11 & 12, St. Andrew's-hill	49 17 6*	109 10 0*	29 15 0	91 17 6*	62 15 0	58 5 0*	43 10 0	28 15 0	54 10 0	64 10 0
Peirson & Co.	55 0 0	112 5 0	33 19 6	96 0 0	68 7 6	63 12 6	43 0 0	27 10 0	52 10 0	61 0 0
A. Ritchie & Co.	74 18 0	151 7 9	46 4 3	132 18 6	96 18 6	84 17 6	60 15 0	43 5 0	69 19 3	79 7 6
St. Pancras Ironwork Co., Ltd.	75 0 0	170 0 0	43 0 0	125 0 0	82 0 0	85 0 0	64 0 0	45 0 0	78 0 0	81 0 0
Wilmer & Sons, 11 to 14, Burry-street	52 10 0	125 0 0	*25 0 0	95 0 0	46 0 0*	65 0 0	*40 0 0	*27 0 0	47 0 0*	56 0 0*

LONDON.—For the construction of a shelter-house at the disinfecting station, Seven Sisters-road, Holloway, N., for the Islington Borough Council. Mr. J. Patten Barber, Borough Engineer, Town Hall, Upper-street, N.:—

J. Johnson	£655	Steven Bros.	£618
J. C. Mather	624	W. Webber, 316, Liverpool-road, N.*	602
Sabey & Son, Ltd.	670		

LONDON.—For flood relief works, extension of Hackney-wick to Abbey-mills relief sewer, for the London County Council:—

F. H. English	£6,412 0 0	G. J. Anderson	£4,599 6 3
R. C. Brebner & Co.	5,928 11 2	Langley, Hardy, & Johnson	4,545 18 0
D. R. Paterson	5,841 8 6	C. Ford	4,387 15 2
Johnson & Langley	5,622 4 9	C. W. Killingback & Co.	4,310 8 7
Muirhead, Greig, & Matthews	5,596 14 7	J. & E. Bloomfield	4,115 17 11
G. Hav & Co.	5,517 10 1	J. Bentley	4,097 19 0
O. T. Gibbons	4,989 0 0	Kelletts, Ltd.	4,072 19 8
Lawton & Co.	4,746 18 2	W. Moss & Sons, Ltd., Loughborough*	3,966 14 3
E. Strickland & Co.	4,644 5 6		
T. W. Pedrette	4,635 1 9		

LONDON.—For lighting by electricity the Ranger's house, Blackheath, for the London County Council:—

Salisbury Electrical Engineering Co.	£245 10 0
Jackson Bros.	239 11 0
W. Dickinson	222 10 0
Sweet Bros.	200 0 0
Lea & Warren	190 0 0
E. Probert & Co.	189 0 0
A. H. Marshall & Co.	189 0 0
F. J. Coleby & Co.	187 10 0
Hooper, Neary, & Co.	187 5 0
Tamplin & Makovski, Ltd.	176 7 6
Ward Bros.	175 0 0
Wright, Methuen, & Co., Manchester*	174 2 0

LONDON.—For the erection of a laundry on site of Nos. 136 and 138, New Kent-road, S.E., for Mr. F. W. Bellelni. Mr. G. A. Lansdown, architect, 9, Regent-street, S.W.:—

W. Fitch	£7,492	C. Ansell	£6,060
Spencer, Santo, & Co.	6,595	B. E. Nightingale	6,030
H. Burman & Sons	6,520	J. Marsland & Sons	5,985
Sabey & Son, Ltd.	6,499	W. Downs	5,973
W. Smith & Sons	6,493	Batteley, Sons, & Holness	5,947
H. & E. Lea	6,237	Johnson & Co.	5,915
Sayer & Son	6,227	R. & B. Evans	5,818
Kirk & Kirk	6,173	T. G. Sharpington†	5,748

MUTLEY PLAIN.—For the conversion of No. 16, Mutley Plain, into a shop as per plans, specifications, and quantities prepared by Mr. G. B. Hill, 41, Mount-gold-road, Plymouth:—

Pearn Bros.	£239	S. Stevenson	£180
G. B. Turpin	197	A. C. Jones*	175

[Architect's estimate, £180.]
[All of Plymouth.]

NORWICH.—For heating apparatus and ventilating appliances, etc., at Free Library, St. Andrew-street, for the Free Library Committee. Mr. A. E. Collins, City Engineer, Guildhall, Norwich:—

Dilworth & Carr, Preston*‡ £315

‡ Including certain extras.

PLYMOUTH.—For alterations at St. Peter's Schools. Mr. Noel F. Bellamy, architect and surveyor, Courtenay-street, Plymouth:—

Davy	£323 4 6	Flashman	£299 0 0
W. E. Blake	335 0 0	Kerswell	289 0 0
Adams	310 0 0	Stevenson	273 0 0
Stanbury, Devonport*	300 0 0	Finch	255 0 0
		Greet	243 0 0

SHEFFIELD.—For the erection of a public elementary school at Manor, for the Education Committee. Messrs. C. & C. M. Hadfield, architects, Cairns'-chambers, 19, St. James'-street, Sheffield. Quantities by Mr. Leon A. Francis, 8, John-street, Adelphi, W.C.:—

Ash. Son, & Biggin	£7,870 0	J. & H. Wheen	£6 870 0
A. Bradbury	7,747 0	H. Boot & Son	6,800 0
W. & A. Forsdike	7,500 0	J. S. Robertson	6,757 0
S. C. Boul	7,449 0	Dawson, Jones, & Co.	6,739 0
W. May & Son	7,200 0	D. O'Neill & Son	6,224 0
J. Vasey & Son	7,096 0	T. Wilkinson & Sons, Guernsey-road, Sheffield†	6,214 0
J. Fidler, Ltd.	7,017 0		
Wellerman Bros.	6,970 16		
J. Eshelby & Son	6 895 0		

[Architects' estimate, £6,500]

SHENLEY HILL (Herts.).—For rebuilding house, etc., for Mr. F. W. Ranken Hore. Mr. F. T. Baggallay, architect, 50, Berners-street, Oxford-street, W. Quantities by Mr. F. R. Smith, surveyor, 13, Victoria-street, Westminster, S.W.:—

W. Holt & Sons	£7,350	N. Lidstone	£6,992
J. Simpson & Sons	7,185	O. Miskin & Sons	6,900
W. H. Lascelles & Co.	7,050	Boff Bros.*	6,732

SHEPSHED.—For laying-out sewage farm, for the Urban District Council. Mr. J. G. Foston, Surveyor to Council:—

J. T. Ball, Barrow-on-Soar* £166 4 6

SUDBURY.—For sanitary alterations, etc., for the Sudbury Guardians. Messrs. Clare & Ross, architects, 1, West-street, Finsbury-circus, E.C.:—

G. C. Gooday	£3,493 17 0	H. J. Linzell	£2,833 0 0
W. Bell & Sons	3,320 0 0	Scales & Robins	2,775 0 0
Oak Building Co.	3,100 0 0	Mason & Son	2,749 0 0
Cubitt & Gotts	2,940 0 0	W. Manders	2,726 19 4
Coulson & Lofts	2,900 0 0	Brown & Graham	2,715 2 8
Redding & Sons	2,890 0 0	Portway & Co.	2,715 2 8
G. Grimwood & Sons	2,848 0 0	A. Suckling & Co., Halstead*	2,675 0 0

SWINDON.—For alterations to stables, etc., at the King's Arms Hotel, for Messrs. T. and J. Arkell. Messrs. Drew & Sons, architects, Regent-circus, Swindon:—

H. & C. Spackman, Swindon* £149

TIPTON.—For roadworks, Eagle-street and part of Hall-street, for the Urban District Council. Mr. W. H. Jukes, Surveyor, Public Offices, Owen-street, Tipton. Quantities by Surveyor:—

T. Mayes	£297 17 3	Emery & Co.	£215 0 0
T. Allsopp	274 19 3		

[Surveyor's estimate, £286.]

WINSFORD.—For erecting a bakery in Weaver-street, for the Winsford Industrial Co-operative Society, Ltd. Messrs. J. Baker & Sons, architects, Willesden Junction, London:—

H. Sergeant's Executors	£2,134
J. Fowles & Sons, High-street, Winsford*	1,990

WIRRAL.—For constructing sewers at Moreton, Ridston, and Upton, for the Rural District Council. Mr. F. E. Priest, engineer, 13, Harrington-street, Liverpool:—

R. C. Brebner & Co., 4A, St. Andrew's-square, Edinburgh* £2,921 14 0

WORKSOP.—For erecting a house in Queen-street, for Mr. P. Wheeler. Mr. A. H. Richardson, architect, Victoria-buildings, Worksop. Quantities by architect:—

C. Sprakes & Sons	£515 0	G. Wright	£390 0
J. Doncaster	456 10	C. A. Leverton	373 15
F. I. Rowsell	411 0	A. Chadwick, Worksop*	368 0
G. G. Middleton	405 0		

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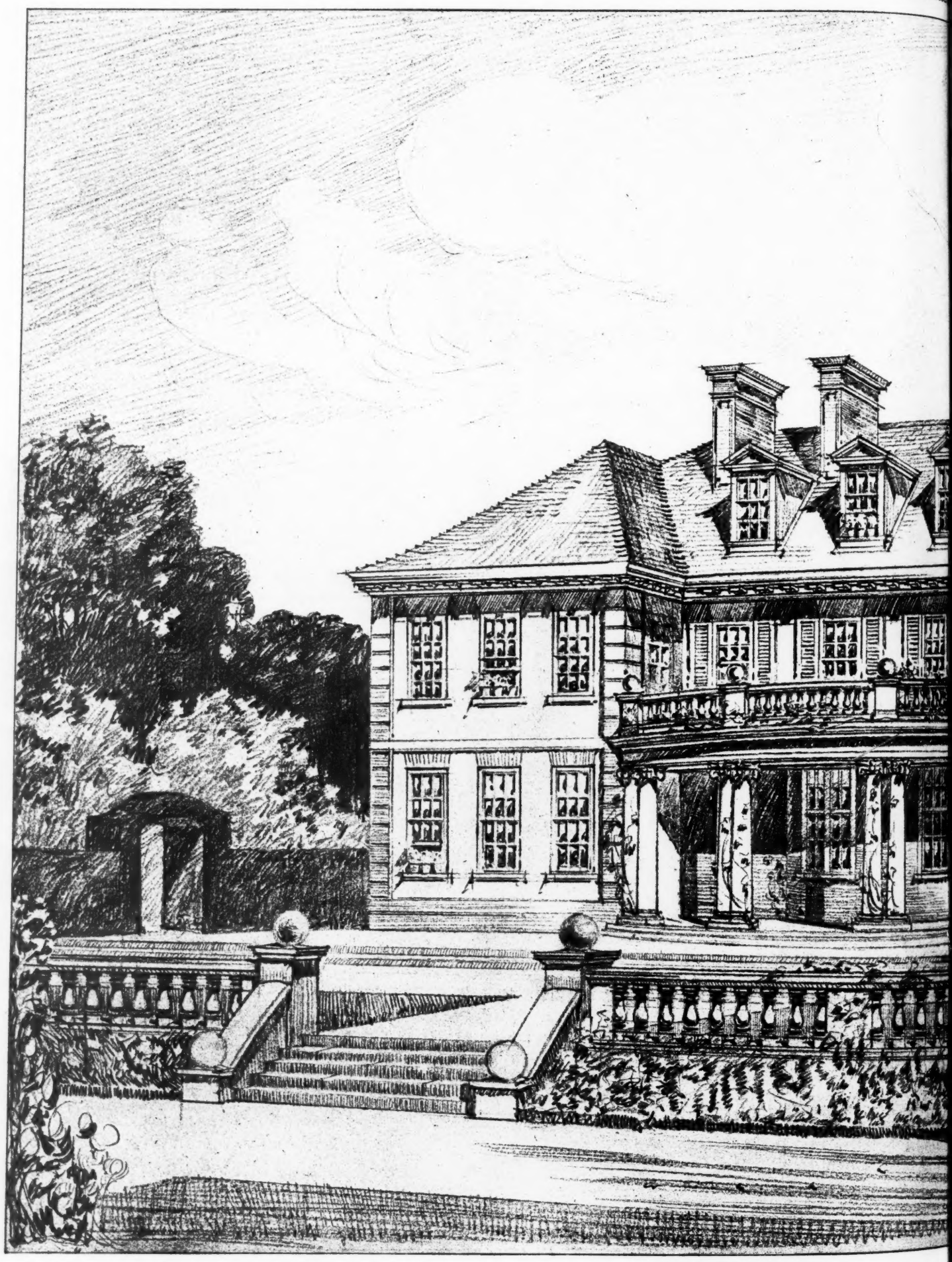

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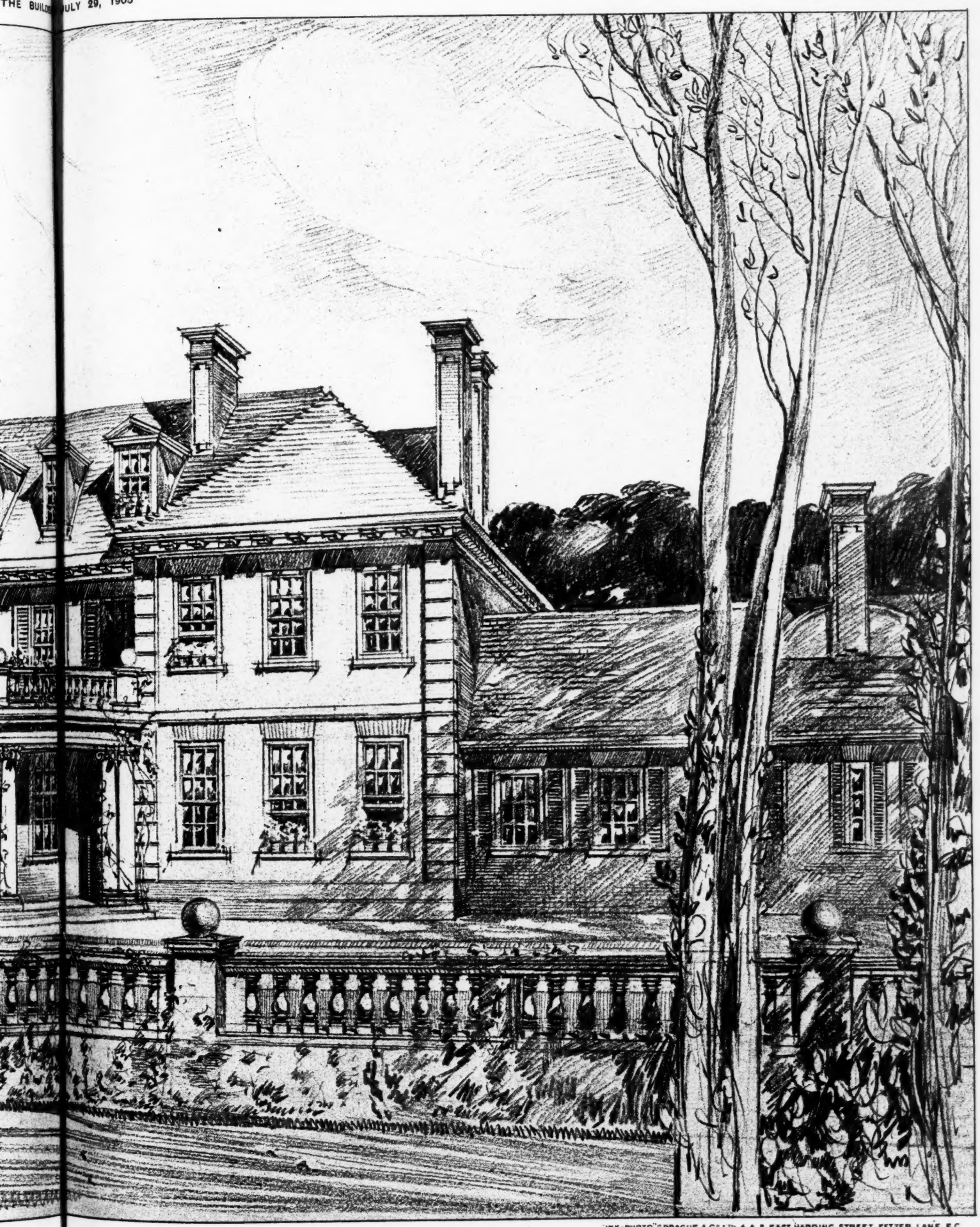

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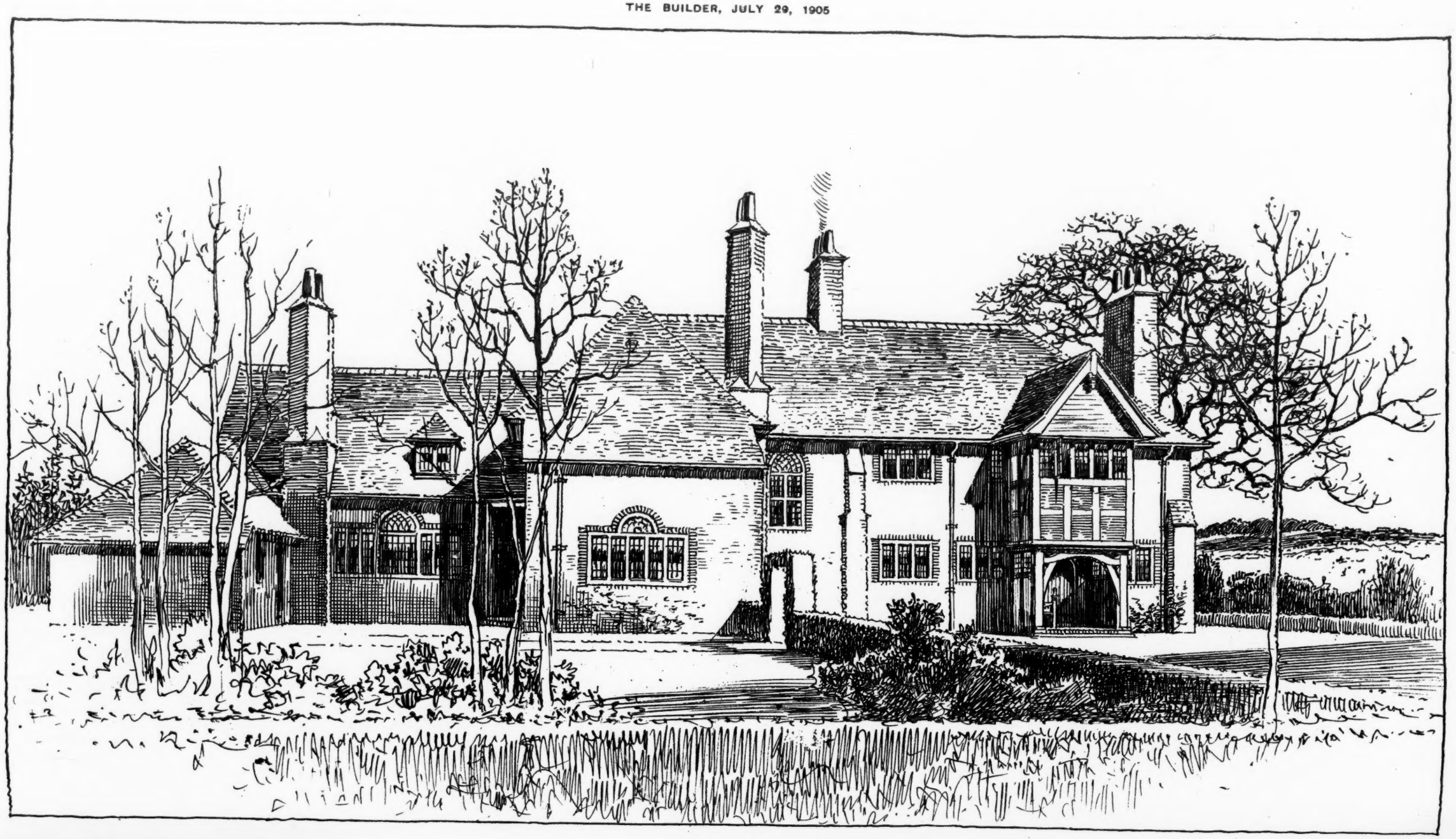

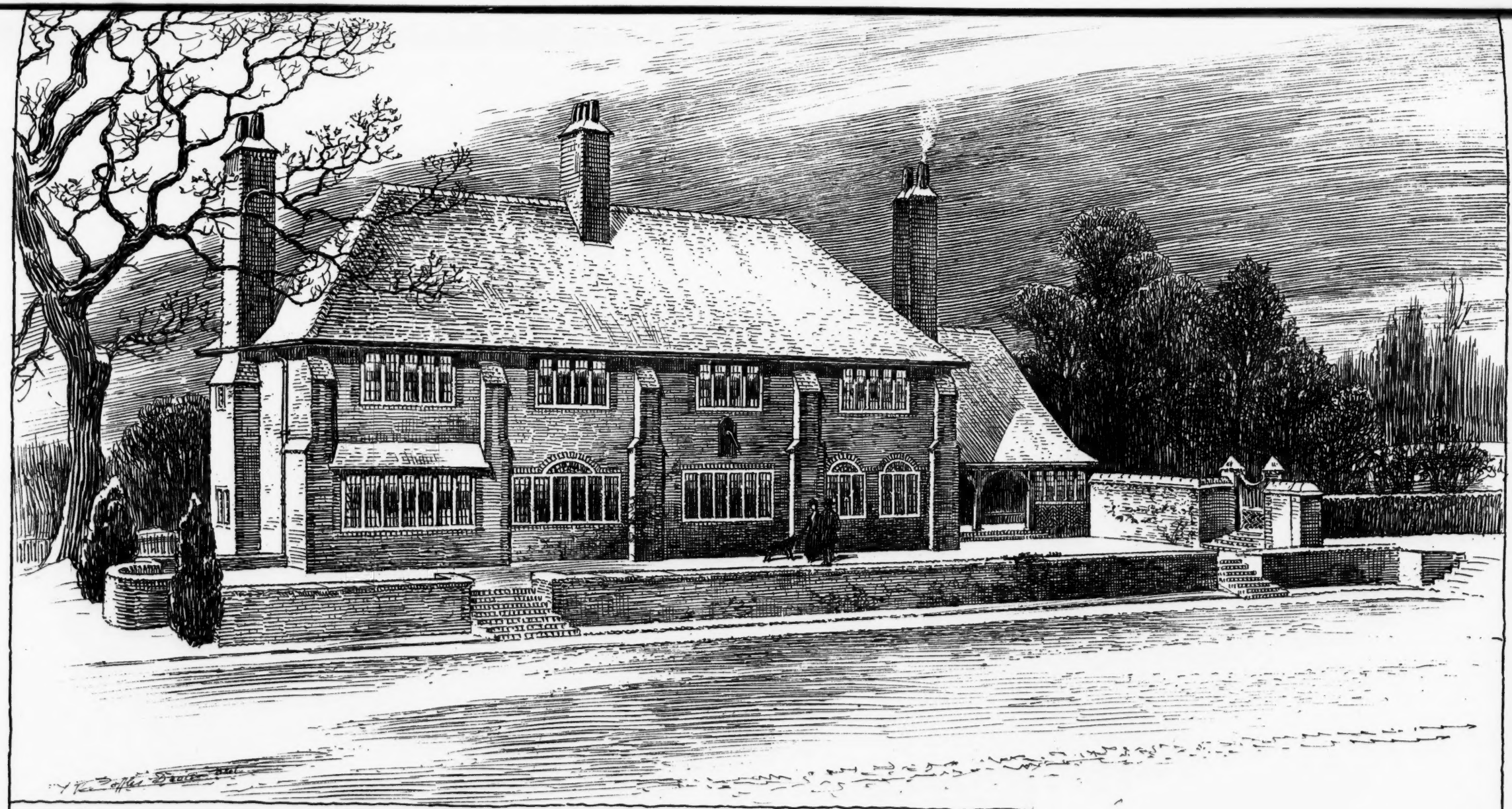

A House at Haslemere — E. J. May Architect

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